SADDLE RIDGE

Area Structure Plan

THE CITY OF CALGARY
PLANNING & BUILDING DEPARTMENT

1999 February
Office Consolidation

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NOTE: Persons making use of this consolidation are reminded that it has no legislative sanction, and that amendments have been embodied for ease of reference only. The official Bylaw and all amendments thereto are available from the City Clerk and should be consulted when interpreting and applying this Bylaw.

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SADDLE RIDGE AREA STRUCTURE PLAN

TABLE OF CONTENTS

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		PAGE
EXECUTIVE SUMMARY		**1**
A.	**BACKGROUND AND SUPPORTING INFORMATION**	**2**
1.0	**INTRODUCTION**	**2**
1.1	Study Area Location	2
1.2	Background	2
1.3	Study Area Context	4
2.0	**STUDY AREA CHARACTERISTICS**	**4**
2.1	Natural Features	4
2.2	Plan Summary	6
2.3	Policy Statements	6
2.4	Natural Gas Field	8
2.5	Adjacent Land Uses	8
3.0	**POLICY CONTEXT**	**10**
3.1	Calgary Regional Plan	10
3.2	Calgary General Municipal Plan	10
3.3	Airport Phase 3 Design Brief	10
3.4	Restricted Development Area/Transportation and Utility Corridor	12
3.5	Airport Vicinity Special Regulations	12
3.6	Calgary International Airport Master Plan	13
3.7	Sour Gas Facility Setbacks	13
3.8	Northeast Transportation Studies	14
B.	**THE PLAN**	**15**
4.0	**LAND USE PLAN**	**15**
4.1	General Concept	15
4.2	Residential	16
4.3	Joint Use Sites	17
4.4	Commercial	18
4.5	Major Employment Areas	21
4.6	Open Space, Parks and Recreational Facilities	24
4.7	Pedestrian/Bicycle Pathways	25
5.0	**TRANSPORTATION**	**25**
5.1	Major Roadway Network	25
5.2	Internal Circulation	26
5.3	Light Rail Transit	28
5.4	Bus Service	29

SADDLE RIDGE AREA STRUCTURE PLAN

TABLE OF CONTENTS

PAGE

6.0 MUNICIPAL SERVICES AND UTILITIES 30

6.1 Water Supply 30
6.2 Sanitary Sewers 30
6.3 Stormwater Management 32
6.4 Electrical 32
6.5 Natural Gas 34
6.6 Telephone 34

7.0 COMMUNITY SERVICES 34

7.1 Public Health 34
7.2 Social Services 34
7.3 Library 36
7.4 Police 36
7.5 Fire and Ambulance 36

8.0 THRESHOLD AND SEQUENCE OF DEVELOPMENT 36

8.1 Sour Gas Constraint Areas 38

PAGE

LIST OF MAPS

1. Study Area Location 3
2. Study Area Context 5
3. Existing Land Use 7
4. Development Constraints 9
5. Development Cells 11
6. Land Use Plan 19
7. Proposed Northeast Transportation Network 27
8. Water Supply and Sanitary Sewers 31
9. Stormwater Management 33
10. Utilities 35
11. Sour Gas Constraint Area 39

SUPPORTING INFORMATION 41

Appendix 1 43
Engineering Department Report: "Servicing Cost Implications for Saddle Ridge" 1984 January 03.

Appendix 2 49
Energy Resources Conservation Board, Calgary, Alberta: "Public Meeting to Consider Concerns Regarding the Development of the Proposed Saddle Ridge Area" (Decision D83-6).

EXECUTIVE SUMMARY

The Saddle Ridge Area Structure Plan study area encompasses 1,270 hectares (3,140 acres) of land in the northeast sector of the city. The area is located immediately north of the Falconridge and Castleridge communities, and east of the Calgary International Airport.

Most of the area (882 hectares/2,180 acres) is designated for residential and associated uses, *including a centrally-located Town Centre (community core), a senior high school and major regional playfields (Bylaw 15P97, 1997 June 16).* The balance is set aside for employment-generating activities - an industrial district along the west side adjacent to the airport, and a mixed light industrial/office park and possible regional centre to the north.

The residential areas of Saddle Ridge are expected to develop in a pattern generally similar to the Falconridge/Castleridge and Properties communities to the south. Planning approval has already been granted to two subdivisions (Martindale and Taradale) to the north of 64 Avenue. Saddle Ridge will also incorporate two special features - an extension of the Northeast Light Rail Transit (LRT) line which will be integrated within the residential community, and stormwater retention lakes likely contained within public parks. These features will contribute towards a unique character for the Saddle Ridge community.

The industrial district proposed along the western edge of Saddle Ridge will evolve gradually over an extended period of time. The area presently accommodates a mixture of residential and outdoor industrial developments. The initial stage of transition, already in progress, will see an increase in the number of limited-service industrial activities. The present lack of servicing capacity precludes more intensive light industrial development and it is anticipated that services will not be extended to the area for several years.

There are five active sour gas wells in the Saddle Ridge area, three of which are expected to remain in production for 15 to 20 years. The Energy Resources Conservation Board (E.R.C.B.) of Alberta has recommended that prior to depletion of the wells no urban development occur within 100 metres of the wells and 30 metres of the pipeline. These setbacks are incorporated into this Plan.

A. BACKGROUND AND SUPPORTING INFORMATION

1.0 INTRODUCTION

1.1 Study Area Location

The Saddle Ridge area is located in the northeast sector of the city, as shown on Map 1. The study area for this Area Structure Plan encompasses Sections 10, 11, 14 and 15, as well as the western halves of Sections 12 and 13-25-29-W4.

The study area comprises approximately 1,270 hectares (3,140 acres) bounded by the airport property and 36 Street on the west, the proposed 96 Avenue Expressway alignment on the north, the Transportation and Utility Corridor (T.U.C.) on the east and 64 Avenue and the Falconridge and Castleridge subdivisions on the south. The Martindale and Taradale subdivisions, in which residential development has already commenced, are included in the Area Structure Plan as they will form an integral part of the Saddle Ridge communities south of 80 Avenue NE. The two country residential subdivisions north and south of 80 Avenue in the western portion of the study area are also addressed in this Plan.

1.2 Background

Sections 10, 11, 14 and 15-25-29 W4M covered by this Area Structure Plan were annexed to the City in 1961. The west halves of Sections 12 and 13-25-29 W4M were annexed to the City in 1989 (Bylaw 18P90, 1990 September 10). The southeast quarter of Section 15 had been subdivided to allow country residential development as early as 1913. In 1964 the western half of Section 10 was subdivided, generally into five-acre parcels, for country residential use.

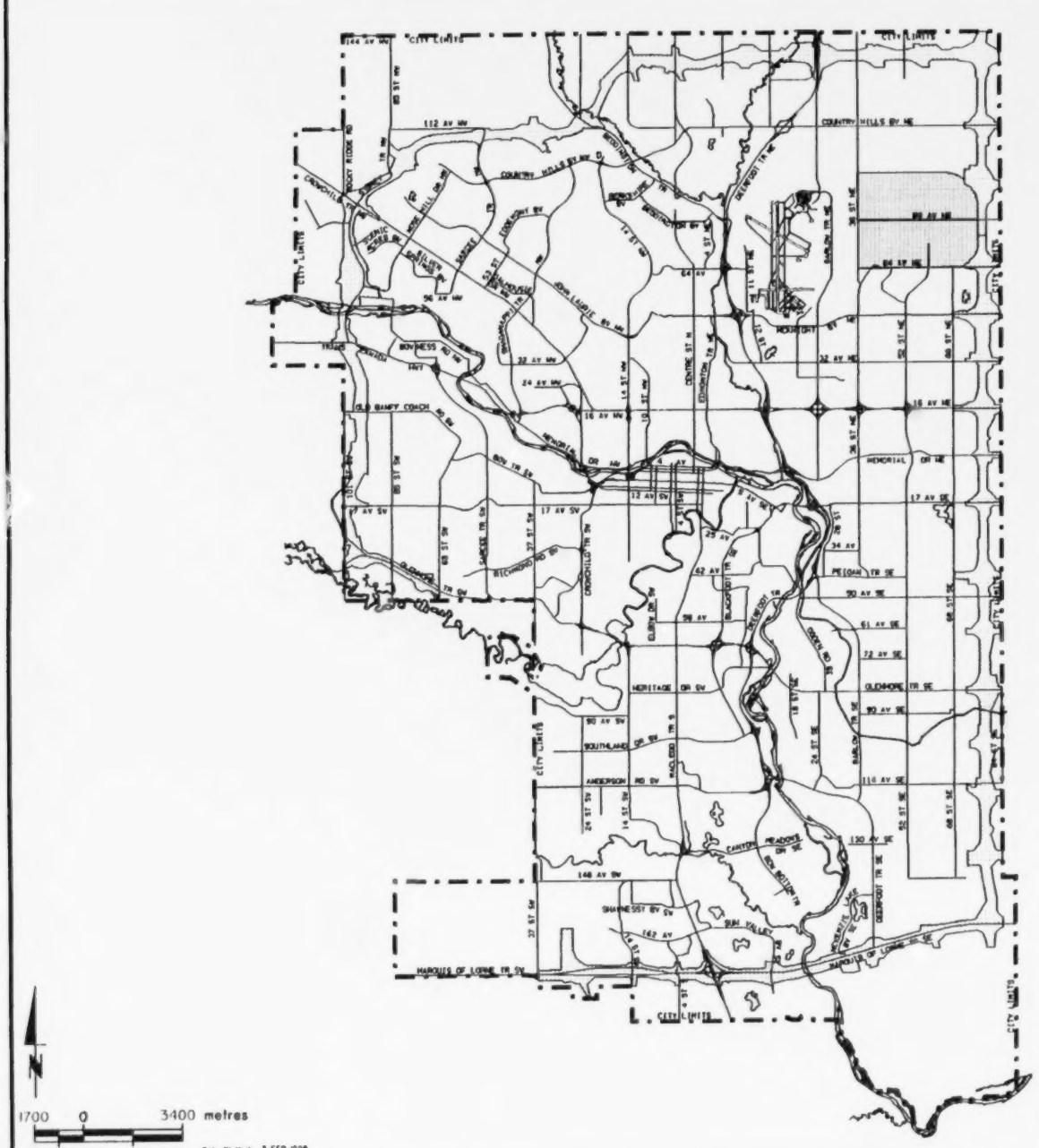
In 1976 City Council approved the Airport Phase 3 Design Brief. Although this document dealt primarily with the Castleridge and Falconridge areas, it also addressed the Saddle Ridge area in a very general way. The Design Brief did not establish detailed land use, road or servicing plans for the lands north of 64 Avenue, but rather placed them in an "urban reserve" category due to sour gas and servicing constraints. The lands east of 44 Street (which approximately coincides with the 30 N.E.F. contour related to the proposed new airport runway) were designated as "urban reserve future residential", while the lands within the critical noise zone to the west of 44 Street were designated "urban reserve future industrial".

The lands which are presently being developed as the Martindale and Taradale subdivisions to the north of 64 Avenue were approved at the policy level for development through an amendment to the Design Brief, which was approved by City Council in 1977.

Saddle Ridge ASP

Map 1

STUDY AREA LOCATION



LEGEND

- Saddle Ridge Study Area
- Transportation and Utility Corridor

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1.3 Study Area Context

Development of the Saddle Ridge area will constitute a logical northerly extension of the residential development pattern already established in the Properties, Castleridge/ Falconridge and Martindale/ Taradale areas, and of the industrial areas to the south of the airport. The location of Saddle Ridge in relation to these other developments is shown in Map 2.

The Northridge area, which was annexed to the City in 1989, lies immediately to the north of Saddle Ridge. Development in this area will likely continue the development pattern established in Saddle Ridge, with residential development to the east of the 36 Street Expressway and industrial development closer to the airport on the west. (Bylaw 18P90, approved 1990 September 10.)

The study area is situated within a sour gas field which contains several wells and pipelines. These pipelines feed into the Petrogas processing plant east of Balzac, approximately 5.5 kilometres (3.5 miles) to the north of the present city limits. The wells and pipelines will necessitate the imposition of development setbacks within Saddle Ridge until such time as the field is depleted and the wells and pipelines are abandoned.

2.0 STUDY AREA CHARACTERISTICS

2.1 Natural Features

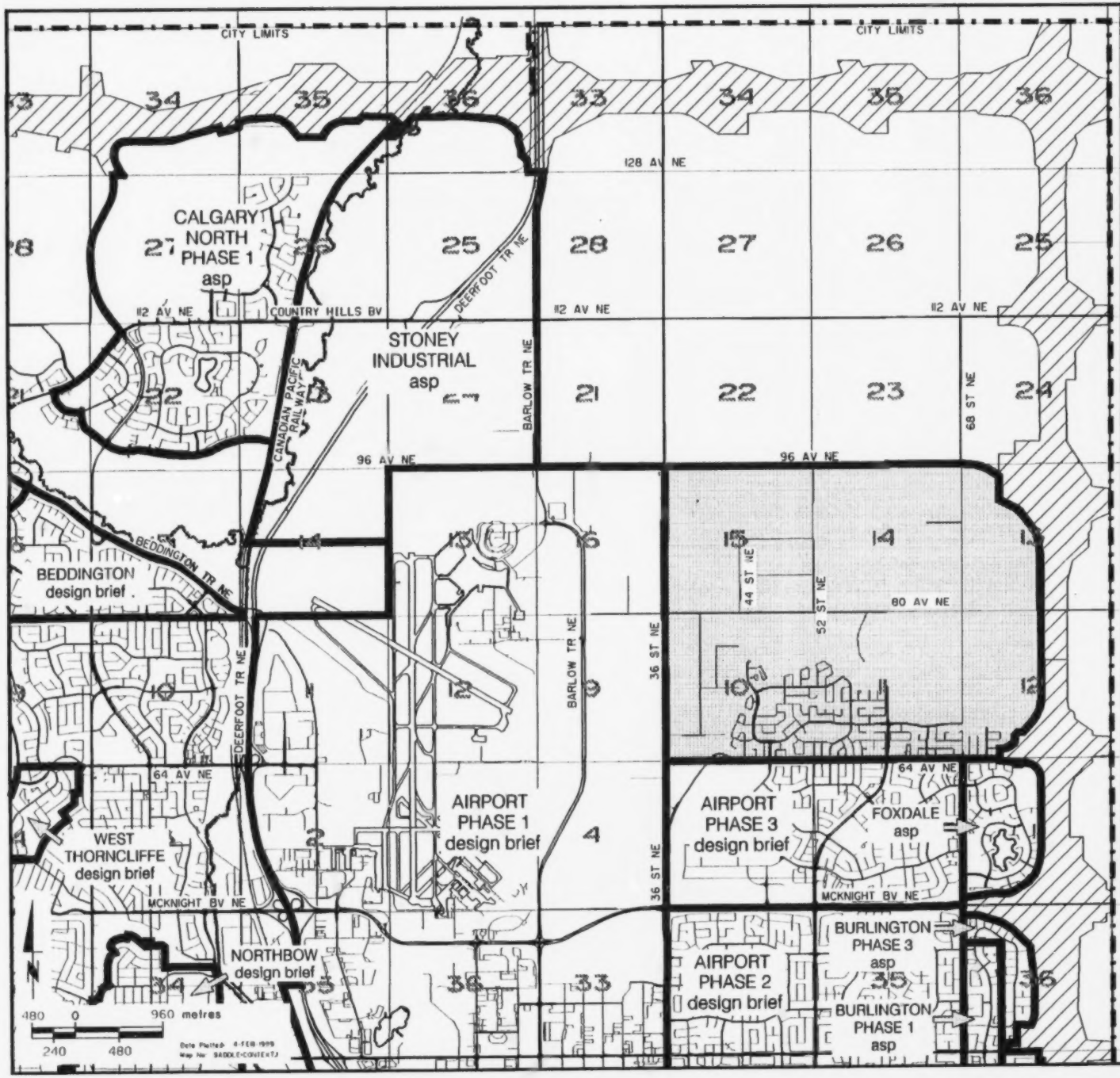
2.1.1 Topography, Soils and Drainage

Saddle Ridge is essentially flat and featureless. There is an overall gradual slope of the land from the northeast to the southwest resulting in an elevation change of approximately 18 metres (60 feet). Within this basic land form is a pattern of low, rolling rises and depressions. The long, smooth slopes will require extensive grading but will pose no undue constraint to development.

The soils are deep loam over silt and clay. Drainage is discontinuous, and varies from well-drained hilltops and low ridges to poorly-drained clay-lined depressions. Many poorly drained depressions are flooded in the spring season and provide high quality marsh habitats. The relatively flat nature of the area will create some difficulty in establishing satisfactory stormwater drainage.

2.1.2 Views

The average elevation of the Saddle Ridge area is substantially higher than the adjacent lands to the west, resulting in excellent views of the downtown and northern portions of the city and the mountains.



Saddle Ridge ASP

Map 2

STUDY AREA CONTEXT

Legend

- Saddleridge ASP Area
- Transportation Utility Corridor

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2.1.3 Vegetation and Wildlife

Natural areas associated with the scattered marsh *wetlands with significant natural vegetation (Bylaw 7P93, approved 1993 May 10)*, pond, tree and shrub communities provide good quality habitat for hawks, waterfowl and shorebirds. Coyotes, badgers, red foxes and deer have also been observed in the area.

2.2 Existing Land Use

The majority of the Saddle Ridge area is presently under agricultural cultivation. However, country residential development on five-acre parcels has occurred in both the southeast quarter of Section 15 and the west half of Section 10, as shown in Map 3. Another small subdivision, in which five residences have been built, is located in Section 14 north of 80 Avenue.

In the subdivision in the west half of Section 10 approximately 30 homes have been built over the past 20 years. In addition, approximately 20 industries, primarily of the outdoor storage type, have established in this area without City approval. The subdivision in the southeast quarter of Section 15 accommodates 30 homes. The residential population of all these subdivisions (approximately 250) constitutes the Saddle Ridge community, whose community hall and rodeo facility are located in a "reserve" parcel on 44 Street, as shown on Map 3.

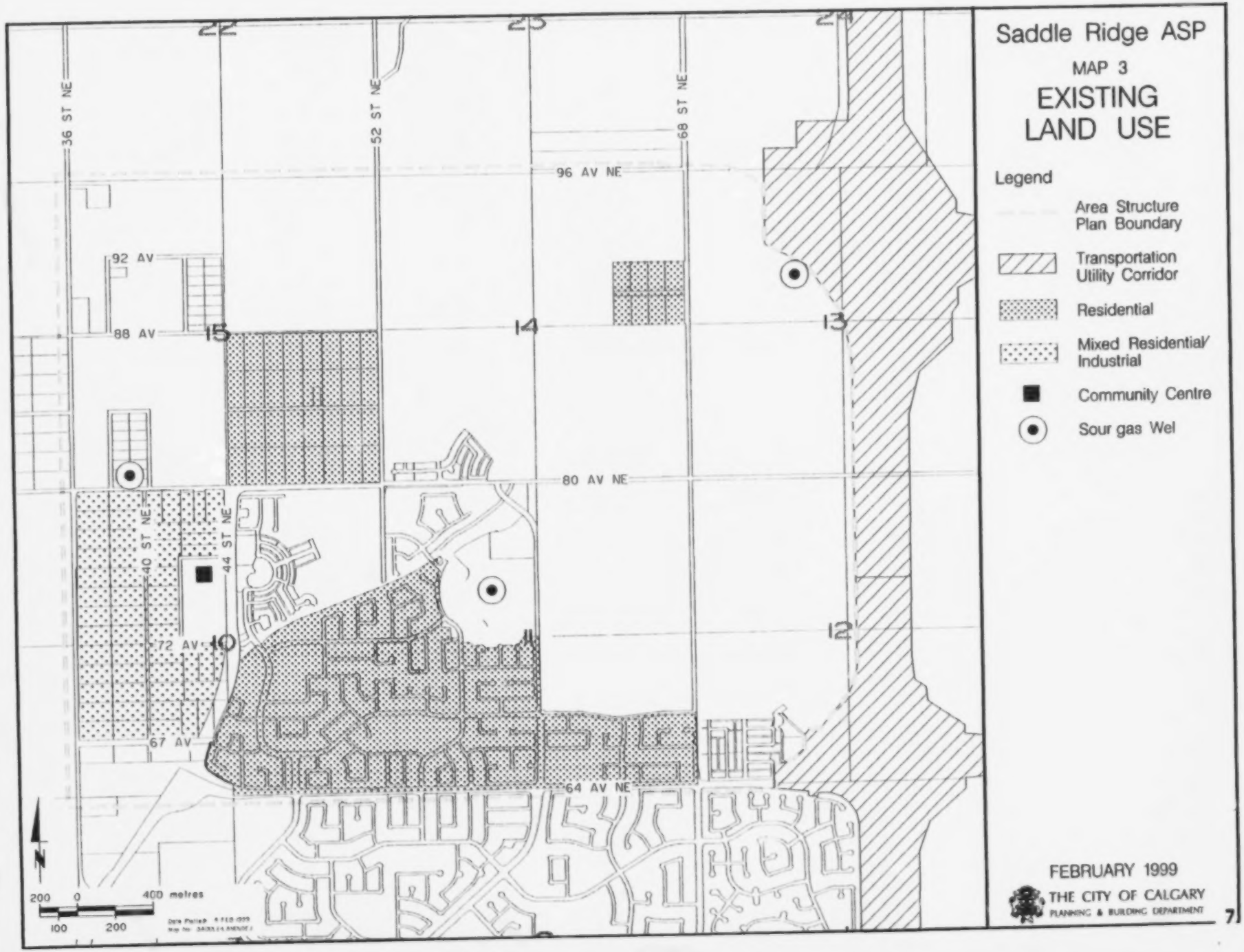
All of the lands in the study area except for Martindale and Taradale are currently designated as U.R. (Urban Reserve) under the Land Use Bylaw, which is primarily a holding category designed to maintain land in large parcels until development to urban densities occurs.

The road pattern in the Saddle Ridge area is a grid which generally follows the section lines. 36 Street and 80 Avenue are the primary access roads into the area. The road system approved for Martindale and Taradale is illustrated in Map 3.

2.3 Martindale and Taradale

Outline plans and land use redesignations were approved in September, 1981 and June, 1982, respectively, for the Martindale and Taradale subdivisions as shown in Map 3. These areas are presently under development, and will accommodate primarily single-family detached homes, with an average density of up to 8.5 units per acre.

Martindale, as presently approved, has a population capacity of approximately 5,000. Taradale, with its current development area of approximately 32 hectares (80 acres), is expected to accommodate about 1,500 people. Each of these residential developments will eventually become part of larger communities within the Saddle Ridge area as development occurs on the adjacent lands to the north, in accordance with the land use plan (Map 6). (Bylaw 7P93, approved 1993 May 10.)


Saddle Ridge ASP
MAP 3
EXISTING
LAND USE
Legend
Area Structure Plan Boundary
Transportation Utility Corridor
Residential
Mixed Residential/ Industrial
Community Centre
Sour gas Wel
22
23
24
36 ST NE
52 ST NE
68 ST NE
96 AV NE
92 AV
88 AV
15
14
13
80 AV NE
40 ST NE
44 ST NE
72 AV
10
12
67 AV
64 AV NE
N
200 0 400 metres
100 200
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2.4 Natural Gas Field

The Saddle Ridge area is located within an active natural gas field which has a hydrogen sulphide content of less than one percent by volume. This is a lower concentration of hydrogen sulphide than is normally considered as "sour gas" by the Energy Resources Conservation Board (E.R.C.B.), however conditions in the Saddle Ridge area are such that the E.R.C.B. treats this as a sour gas field.

Three active sour gas wells are located in the Saddle Ridge (Map 4) (Bylaw 36P97, 1998 March 16). The E.R.C.B. of Alberta estimates that it will be in the order of 15-20 years before all the area wells are abandoned.

The implications of this sour gas for urban development are discussed in Section 3.7.

2.5 Adjacent Land Uses

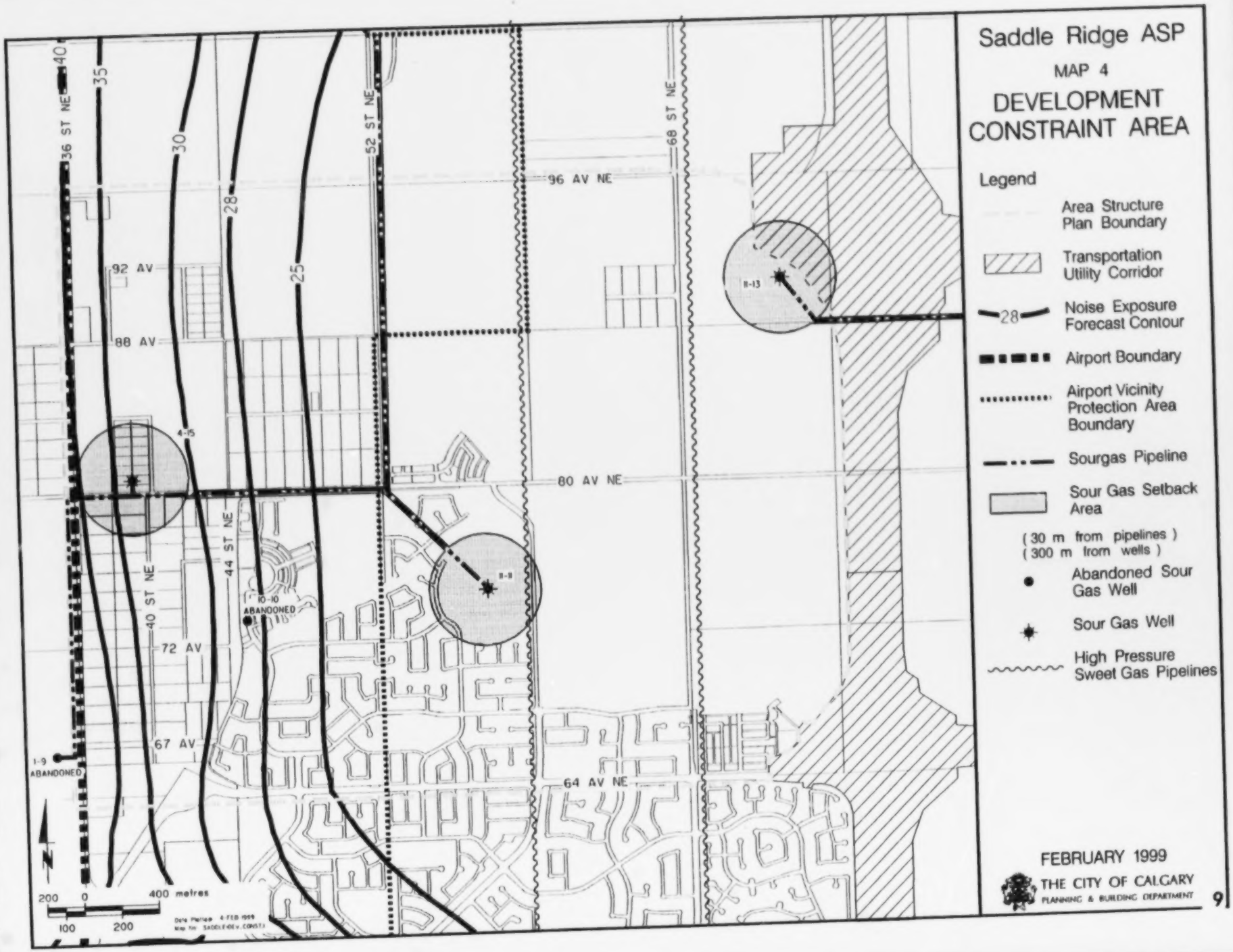
2.5.1 Calgary International Airport

The proximity of Saddle Ridge to the Calgary International Airport has implications for land use in the study area. The effects of the airport noise and height restrictions are discussed in Section 3.5.

Transport Canada is currently drafting a master plan for the airport, as well as a Calgary area air traffic study. These documents are examining the needs and opportunities for expansion of present airport facilities, and are considering alternative methods to accommodate air traffic volume increases. The four sections of land west of 36 Street and north of McKnight Boulevard (i.e., Sections 4, 9, 16 and 21) have been purchased or optioned by Transport Canada to accommodate an additional full-size runway. *A date for the construction of this runway has yet to be established (Bylaw 36P97, 1998 March 16).*

2.5.2 Northridge Area

The lands directly north of Saddle Ridge encompass approximately five sections of land potentially suitable for future residential development, and two and a half sections suitable for industrial development. This land was annexed to the City in 1989. (Bylaw 18P90, 1990 September 10.)


Saddle Ridge ASP
MAP 4
DEVELOPMENT CONSTRAINT AREA
Legend
Area Structure Plan Boundary
Transportation Utility Corridor
28 Noise Exposure Forecast Contour
Airport Boundary
Airport Vicinity Protection Area Boundary
Sourgas Pipeline
Sour Gas Setback Area
(30 m from pipelines)
(300 m from wells)
Abandoned Sour Gas Well
Sour Gas Well
High Pressure Sweet Gas Pipelines
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36 ST NE
52 ST NE
68 ST NE
96 AV NE
92 AV
88 AV
80 AV NE
44 ST NE
40 ST NE
72 AV
67 AV
64 AV NE
40
35
30
28
25
4-15
10-10 ABANDONED
1-9 ABANDONED
11-13
11-11
200 0 400 metres
100 200

3.0 POLICY CONTEXT

3.1 Calgary Regional Plan

As a prerequisite to urban development, lands within the City of Calgary must be classified as "high density" in the Calgary Regional Plan. The Saddle Ridge lands have been classified as "high density" since 1965, and therefore no amendment to the Regional Plan is required in order for further planning and development to proceed.

3.2 Calgary General Municipal Plan

The lands in the Saddle Ridge area east of the proposed 36 Street Expressway alignment (presently 44 Street NE) are designated in Figure 2.1.1 of the Calgary General Municipal Plan (Amendment No. 10) as being suitable for general urban development, while the lands between the proposed expressway alignment and the airport are designated for industrial uses. Furthermore, the Saddle Ridge area is identified in Table 4.1.2 as being suitable for preparation of an area structure plan.

3.3 Airport Phase 3 Design Brief

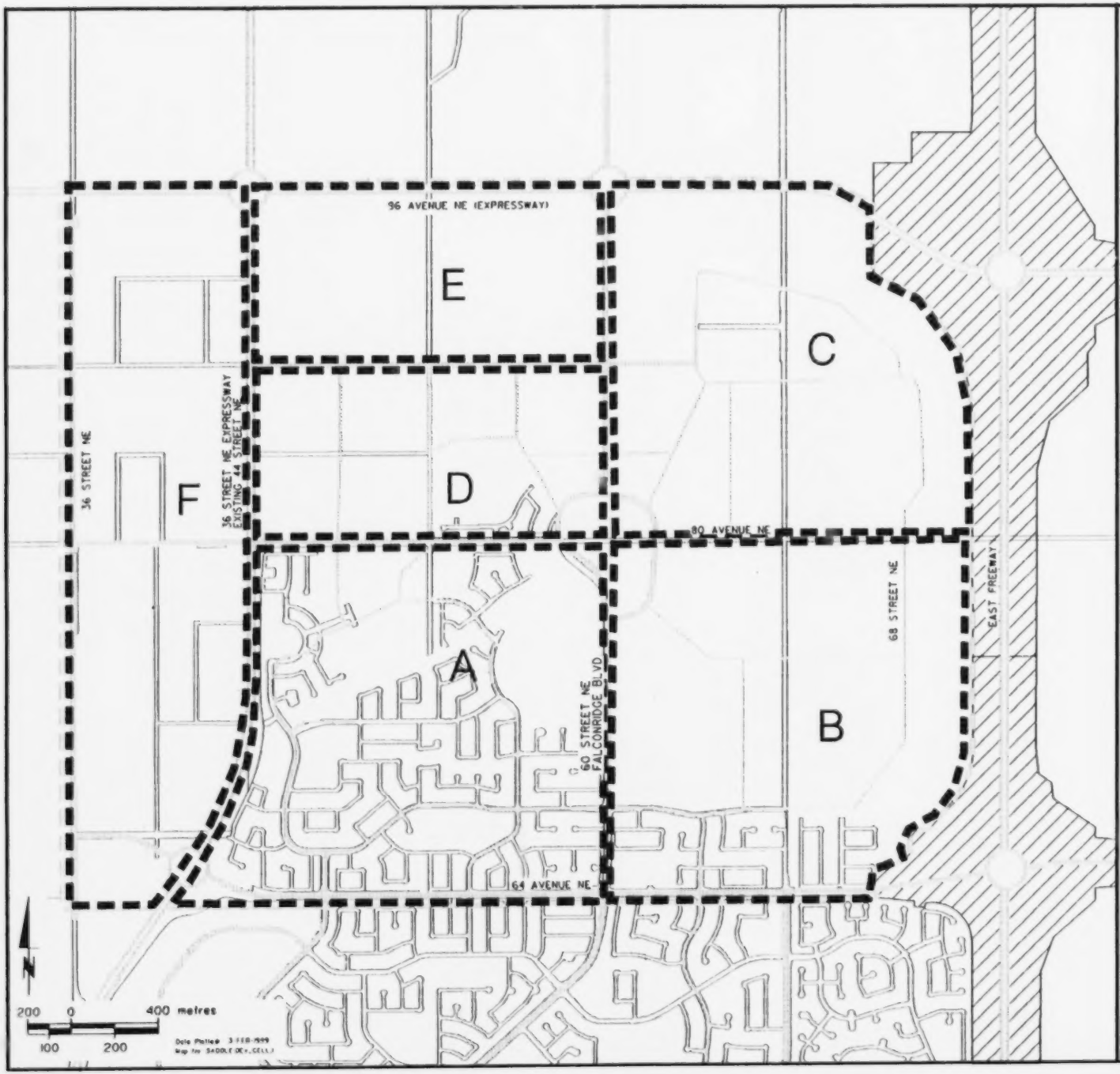
In September, 1976 City Council approved the Airport Phase 3 Design Brief. Since that time several amendments to the Design Brief have been approved.

Due to development constraints imposed by sour gas facilities, together with limitations on municipal servicing capacities, the Airport Phase 3 Design Brief established specific planning policies for only those lands south of 64 Avenue NE. The Saddle Ridge area, to the north of 64 Avenue, was designated as "future industrial" west of the proposed 36 Street Expressway, and "future residential" east of the Expressway.

In 1977, 1981 and 1982 City Council approved amendments to the Design Brief which permitted the development north of 64 Avenue of the first phases of the Martindale and Taradale subdivisions. These amendments and subsequent outline plan approvals established the road pattern, joint use site and commercial site locations in the approved portions of Martindale and Taradale.

The Design Brief established a policy that no industrial development would be allowed in the country residential area bounded by 36 Street, 80 Avenue, 44 Street and 64 Avenue before 1985. The City was also to establish a fund to purchase at market value any residential properties from those owners wishing to sell. These policies were designed to protect the residential development in the area from premature and uncontrolled transition to industrial development.

Upon adoption by Council, the Saddle Ridge Area Structure Plan will supersede the amended Airport 3 Design Brief as the principal planning document addressing development in Saddle Ridge. Those policies contained within the amended Airport Phase 3 Design Brief which relate to development in Martindale and Taradale have either been incorporated into, or are compatible with, this Area Structure Plan. The Airport 3 Design Brief as amended will remain as the effective City Council policy with regard to the Falconridge and Castleridge areas.



Saddle Ridge ASP

MAP 5

DEVELOPMENT CELLS

Legend

- Area Structure Plan Boundary
- Transportation Utility Corridor
- A – F Development Cells
- Cell Boundary

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3.4 Restricted Development Area/ Transportation and Utility Corridor

The western boundary of the Transportation and Utility Corridor has been refined, as shown on the revised Map 6. (Bylaw 18P90, approved 1990 September 10.) The proposed East Freeway will likely be located close to the western edge of the T.U.C. and will be separated from future residential development by a buffer strip and land reserved for local services and utilities. Access to the corridor for servicing purposes must be provided through adjacent development.

3.5 Airport Vicinity Special Regulations

3.5.1 Calgary International Airport Vicinity Protection Area (A.V.P.A.) Regulations

These provincial regulations establish the noise exposure forecast (N.E.F.) contours, and the types of land uses which are permissible within the various noise zones. New residential development is restricted to areas outside the 30 N.E.F. contour, as shown in Map 4. The N.E.F. contours established by Transport Canada for the Calgary International Airport vicinity assume full operation of the proposed new runway immediately west of 36 Street NE.

The regulations also establish zones within which certain types of development require Transport Canada approval (Map 4). Developments affected by these regulations include those exceeding specified heights, those likely to create a smoke, bird, or glare problem, and those which may interfere with electronic apparatus.

Any development in the western part of Saddle Ridge will be subject to these A.V.P.A. regulations.

3.5.2 Calgary International Airport Area Zoning Regulations

This federal statute prescribes height restrictions along the various approaches to the Calgary International Airport. No building or object is permitted to exceed the height limitations without Transport Canada approval. However, as the allowable development heights are in excess of those normally approved in residential or general industrial areas it is unlikely that any proposed development in Saddle Ridge would be constrained by the federal regulations.

Applications for development permits in the Airport vicinity are subject to review and approval by the appropriate provincial and federal government agencies.

3.6 Calgary Area Aviation Master Plan

In 1986, Transport Canada adopted the Calgary Area Aviation Master Plan. This Plan will guide the expansion of Calgary International Airport during the next two decades. The Master Plan has addressed the following elements of relevance to the Saddle Ridge area:

i) Construction of the proposed new runway sometime after the year 2000 (Bylaw 36P97, 1998 March 16).

ii) Construction of the 96 Avenue Expressway, with an interchange for airport access (as per the City of Calgary Transportation System Bylaw); and

iii) Light aviation-related uses (i.e. hangars, maintenance depots) to be located along the west side of 36 Street NE, subsequent to construction of the proposed runway. (Bylaw 18P90, 1990 September 10.)

3.7 Sour Gas Facility Setbacks

The Energy Resources Conservation Board (E.R.C.B.) of Alberta has defined appropriate development setback zones around the sour gas wells and pipelines in Saddle Ridge. *The E.R.C.B. recommends a 100 metre setback from wells and a 30 metre setback from pipelines until the reserves are depleted. However, City Council also concerned about potential nuisance impacts has established appropriate development setbacks of 300 metres and 30 metres from gas wells and pipelines, respectively as shown in Map 4. (Bylaw 18P90, 1990 September 10.)* No buildings, roads (except crossings), parks or other public facilities shall be allowed within these setback areas. Low intensity "open space" uses such as bicycle paths and walks may be permitted. Outdoor industrial storage may be acceptable up to the pipeline rights-of-way providing no ground disturbance results. Permanent fencing shall be required where public facilities such as schools or parks abut the setback area.

Based on expected well depletion rates in relation to marketing projections, the Saddle Ridge area should be free of all sour gas facilities *by about 2008. (Bylaw 18P90 approved 1990 September 10.)* For development occurring prior to well depletion the E.R.C.B. has encouraged the Saddle Ridge area developers, the City and Petrogas Processing Ltd., (the natural gas operator) to minimize potential nuisance conflicts through a coordinated development approach.

In addition to the sour gas facilities described above, two high-pressure sweet gas pipelines run through Saddle Ridge, as shown in Map 4. These pipelines are located within easements of approximately 14 metres (45 feet) in width within which no development may occur. Otherwise they impose no constraint to urban development.

3.8 Northeast Transportation Studies

The City Transportation Department is currently undertaking three studies which relate to land use planning in the Saddle Ridge area. These studies are the Northeast Transportation Study (N.E.T.S.), the 36 Street Expressway Functional Study and the Northeast LRT Extension Functional Study. Upon approval by City Council, the results of the N.E.T.S. will be incorporated by amendment into the City's Transportation Bylaw, and will provide a context for completion of the two functional studies. The preliminary findings of these studies have been incorporated, where applicable, into this Area Structure Plan. In the event that the northeast transportation system eventually approved by City Council varies from that shown in Map 6 of this Area Structure Plan, an amendment to this Plan will be required.

B. THE PLAN

4.0 LAND USE PLAN

4.1 General Concept

The conceptual land use plan for Saddle Ridge is presented in Map 6.

The area is subdivided into six development cells, labelled A to F (see also Map 5). Four of these cells (A, B, C and D) are characterized predominantly by residential and ancillary land uses, and could accommodate a total population in the order of 50,000. *Cells C and D may be considered as a single residential development cell for planning purposes (e.g. reserve dedication, stormwater management, community boundaries). (Bylaw 15P97, approved 1997 June 16.) A Town Centre focused on retail development and an LRT station will be located within a loop roadway circle joining Falconridge Boulevard NE (60 Street) and 80 Avenue NE. The Town Centre will be approximately 12 ha (30 ac) in size. Any substantial reduction below this size will require an amendment to this Plan. To the southwest in Cell A, but within walking distance of this Centre, will be a public senior high school and major regional playfields. (Bylaw 15P97, approved 1997 June 16). Stormwater management scheme for Saddle Ridge will include a dry pond storage concept. These dry ponds may only be located on reserve land if the communities' needs for open space or other reserve purposes are first met. (Bylaw 7P93, 1993 May 10.)*

The plan includes two major non-residential areas. The area to the west of the 36 Street Expressway (Cell F) is designated for industrial uses, with limited-serviced industrial activities likely to predominate for many years to come. To the east of this area, immediately south of the future 96 Avenue Expressway an industrial/office park (Cell E) comprising a range of wholesale/warehousing, light manufacturing and office uses is proposed. The site immediately to the east of the business park, designated "under policy review", may be a suitable location for a regional shopping centre. A final decision on land use for this site should not be made, however, until a study of the suitability of this site relative to alternative locations is completed to the satisfaction of the Planning & Building Department.

Initially, primary access to the area will be via 36 Street, 60 Street and 80 Avenue. However, these routes will ultimately be supplemented by construction of the 36 Street Expressway, the 96 Avenue Expressway and the East Freeway.

The proposed extension of the Northeast LRT line from McKnight Boulevard will be integrated into the residential community to the west of 60 Street. *There will be one LRT station on the west side of Cell A with bus connections on the loop collector. Another LRT Station will be located in the western portion of the Town Centre as the LRT alignment curves north to join Falconridge Boulevard NE (60 Street NE). (Bylaw 15P97, 1997 June 16.)* The most northerly station, located between 88 Avenue and 96 Avenue, will serve the employment-generating development in the northern part of the study area. High density residential development could also be accommodated in proximity to this station.

4.2 Residential

A total of approximately 882 hectares (2,180 acres) of land in the Saddle Ridge study area is designated on Map 6 for residential and associated land uses (including joint use sites, stormwater lakes, parks, roads, local commercial and institutional uses serving the community).

The overall gross residential density in Saddle Ridge shall be in the range of 15-20 units per hectare (6-8 units per acre) within each cell. Assuming an average of 7 units per acre the residential population in Saddle Ridge would be in the order of 50,000 people.

It is important that area developers and planning authorities strive to ensure a variety of housing types and lot sizes in Saddle Ridge. As there are a lack of topographic features in the area new development should strive to create a positive character through landscaping, design and architecture, community facilities and other techniques.

Traditionally a number of the northeast residential communities have served a significant portion of the starter home market. This results in a higher proportion of children than in many other parts of the city. This fact should be recognized in the priority given to the construction of community facilities and the early provision of other services to serve youth. (Bylaw 15P97, 1997 June 16.)

Any multi-family residential development proposed in Saddle Ridge should be encouraged to locate either in proximity to LRT stations or on major roads or collector streets, and as close as possible to schools, parks and community recreation facilities.

The Plan assumes ultimate redevelopment of the existing country residential subdivision north of 80 Avenue in Cell D in a pattern and density similar to the balance of the Saddle Ridge residential area. A replot will be necessary at some future date in order to re-subdivide this area to facilitate new development.

The lands approved for development in Martindale and Taradale are included in this Area Structure Plan because they will eventually constitute part of the community structure of the Saddle Ridge area. However, planning guidelines established in the Airport Phase 3 Design Brief for these areas remain in effect. Residential development in the northern portions of Cells A and B shall follow the patterns of subdivision established in Martindale and Taradale.

4.2.1 Home Occupations

The large size of the parcels in the acreage residential area and the I-4 Limited Service area (Cell F south of 80 Avenue NE) have traditionally attracted a number of uses requiring large areas for outdoor storage such as landscaping services and trucking operations. Such uses are controlled by the Land Use Bylaw but it is appropriate to enunciate a policy protecting existing housing form home occupations. New home occupations in the residential areas should only be approved for limited terms, not include extensive outdoor storage, not include onsite advertising and the operation of the business should not be visible or detectable from outside the site. Other City and Provincial regulations, particularly those relating to the use and outdoor parking of heavy vehicles, should also be respected and enforced. (Bylaw 15P97, 1997 June 16.)

4.3 Joint Use Sites and Schools

The land use plan indicates general locations for joint use sites to accommodate elementary and junior high schools and community centres in Saddle Ridge. Final locations, sizes and configurations of these sites shall be determined at the outline plan stage.

The Public and Separate School Boards have established a preliminary distribution of school sites as shown conceptually in Map 6. In general terms, each of the full section cells will likely require one Public elementary school, one Public junior high school and one Separate elementary/junior high. Cell D is limited in size and will likely require only one site (Public junior high) unless there are changes to the ASP which result in substantial residential development in Cell E.

As it may be some time before the proposed major community facility within the Town Centre is constructed, it would be valuable to identify some temporary community association space. The City of Calgary may request that, when the Public or Separate School Boards are planning new schools in Saddle Ridge, they consider allowing a temporary community building to be sited abutting the school building or assist in helping to identify alternative ways of accommodating community facilities. (Bylaw 15P97, 1997 June 16.)

In the northeast part of Cell A, a Public senior high school site is designated directly east of the proposed LRT station location and immediately north of the future east-west collector road. In order to maximize the support in terms of use of the LRT system, the senior high school, recreation centre and other public facilities must form an integrated nodal development in the immediate station area. (Bylaw 7P93, 1993 May 10.)

4.4 Commercial

4.4.1 Possible Regional Centre (Lands Under Policy Review)

A site of approximately 28 hectares (70 acres) in the southwest quadrant of the 96 Avenue Expressway/ 60 Street interchange is designated "under policy review", pending further study. This site has been proposed by the owner for a "regional centre" which would serve not only Saddle Ridge, but also in the event of future annexation and development, the Northridge area to the north. The location of this site adjacent to a possible LRT station and close to the future interchange of the 96 Avenue Expressway at 60 Street NE, enhance its suitability for regional retail uses. In addition, the centre could contain a broad range of other uses including high density residential, office, hotel and service uses and an LRT park and ride site. However, it must be emphasized that no commitment is being made to these types of uses in this location at this time.

Outline plan approval and land use redesignation shall not be granted for this site until such time as the site has been evaluated against alternative sites, or until other alternative uses compatible with this plan are proposed for this area.

Once the appropriate land use for this parcel is resolved, this Area Structure Plan should be amended accordingly.

4.4.2 Town Centre

Purpose

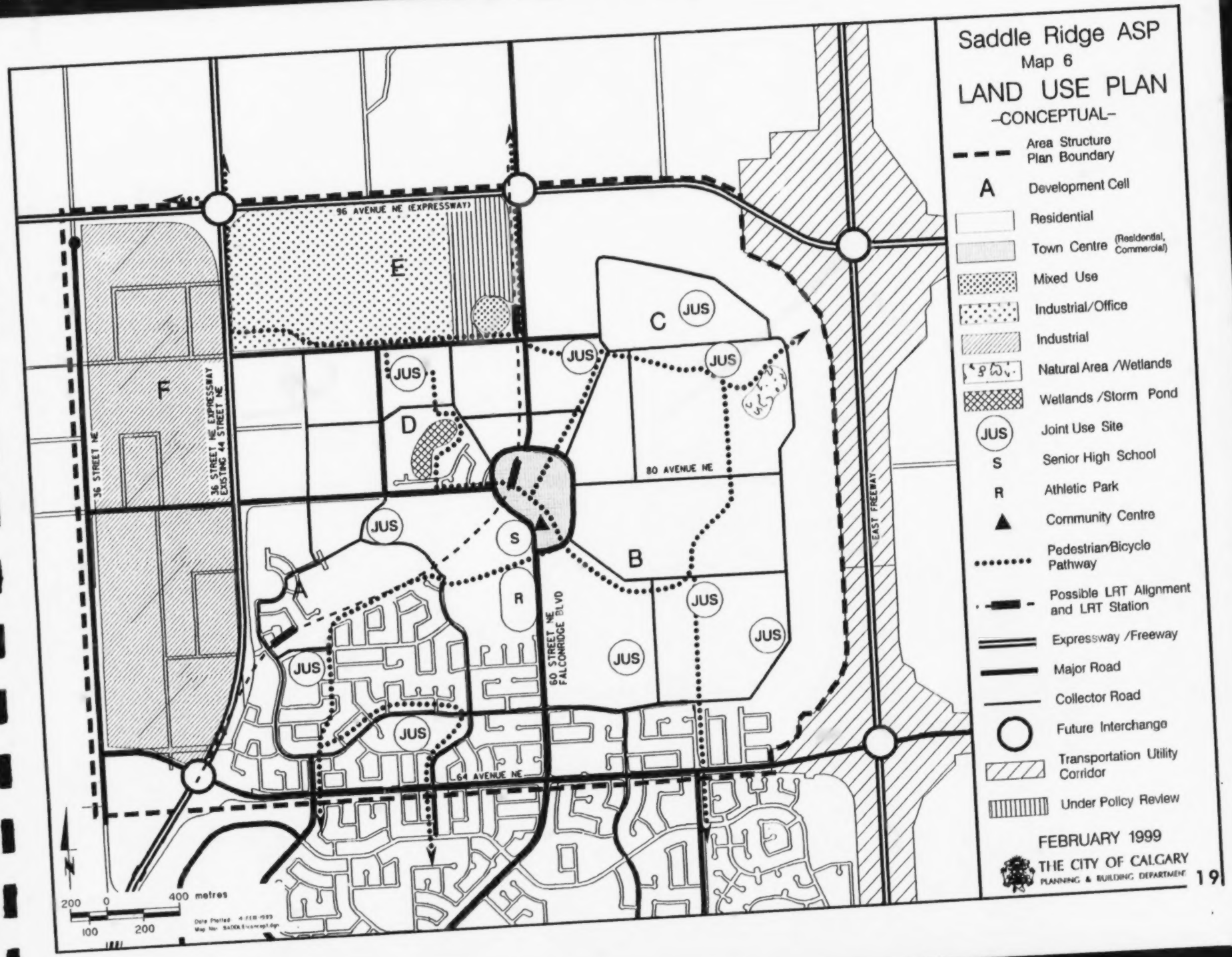
The Land Use Plan (Map No. 6) identifies the location of a central community core which will act as a "Town Centre" for the Saddle Ridge area. The Town Centre should be approximately 12 ha (30 ac) in size. The Centre will be surrounded by a one way modified major standard loop road. The purpose of this Centre is to:

- *Strengthen the community by creating a multi-use focus which will serve many resident needs;*
- *Enhance community identification and resident pride;*
- *Encourage increased resident use of alternatives to the automobile by facilitating LRT/bus use and supporting bicycle/pedestrian travel.*

Uses and Design

The Centre shall have the following components:

LRT station;
Park'n'Ride;
Bus connections throughout the area;
Sector level retail shopping (may also include freestanding theatres, groceries, restaurants, building supply outlets, etc.);
Medium density residential development; and
Community building including limited community facilities, e.g., outdoor skating rink, tennis courts.


Saddle Ridge ASP
Map 6
LAND USE PLAN
-CONCEPTUAL-
Area Structure Plan Boundary
A Development Cell
Residential
Town Centre (Residential, Commercial)
Mixed Use
Industrial/Office
Industrial
Natural Area /Wetlands
Wetlands /Storm Pond
JUS Joint Use Site
S Senior High School
R Athletic Park
Community Centre
Pedestrian/Bicycle Pathway
Possible LRT Alignment and LRT Station
Expressway /Freeway
Major Road
Collector Road
Future Interchange
Transportation Utility Corridor
Under Policy Review
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96 AVENUE NE (EXPRESSWAY)
36 STREET NE
36 STREET NE EXPRESSWAY EXISTING 44 STREET NE
60 STREET NE FALCONRIDGE BLVD
80 AVENUE NE
64 AVENUE NE
EAST FREEWAY
A
B
C
D
E
F
JUS
S
R
200 0 400 metres
100 200

Area landowners, City departments and other public agencies are encouraged to strengthen the Town Centre by locating supportive uses within, or on the outside but adjacent to, the major road circle. In particular, these uses could include:

Offices;
Community buildings;
Medium density housing;
Public services; and
Retail services.

The Town Centre must include a multi-unit residential component of no less than approximately 2 ha (5 ac). Outline plans must indicate to the Subdivision Authority how this housing will be incorporated. The major commercial development will be located predominantly in the southeast quadrant of the Town Centre Area.

A primary objective determining the mix of uses is the desire to create a Centre where community residents can park their cars or get off a bus and undertake a number of activities by foot in relative comfort before returning home. The Centre will provide opportunities for residents to meet for pleasure and business, strengthening the social networks in the community.

The success of the Town Centre is dependent on detailed design elements as well as the more general use and location planning decisions. The design of the Centre will include the following elements:

1. *There will be a major commercial component (sector shopping) with adjacent medium density housing.*

2. *Facilities and design should encourage nearby residents use of transit, bicycles or walking and provide linkages to the regional pathway. The designs should include heated weather-protected transit waiting areas (possibly incorporated into buildings), route maps, bicycle storage facilities, and convenient walking routes leading to and within the Town Centre. Efforts should be made to design and locate walkways between uses in the Centre in such a way as to maximize weather protection.*

3. *Civic infrastructure will include an LRT station, parking and an approximately 2.5 ha (6 ac) Municipal Reserve site for a future community association building and related facilities. The community facility will serve Cells, B, C and D. The site may also accommodate community facilities for the Martindale community (Cell A). As well as a building site, sufficient land will be included to allow for certain community functions, e.g., outdoor skating, daycare playspace, tennis, outdoor market/multi-purpose.*

   There may be other uses of open space (MR) within the Centre to increase its attractiveness and improve its functioning.

Concept Planning

Planning and development of the Town Centre will be complicated by the multiple land ownerships and the City's acquisition requirements for LRT and community facilities. Due to the major importance of the Town Centre to future Saddle Ridge residents it is important that a comprehensive approach to the development be undertaken. Planning at an early stage should address, at an appropriate level of detail, the mix and location of land uses, access and movement systems. Outline Plans affecting the Town Centre must indicate these elements and must show their relationship to the overall design of the Centre. 80 Avenue NE may remain as a major road through the Town Centre lands until the road loop can be made operational at which time 80 Avenue will be closed. (Bylaw 15P97, approved 1997 June 16.)

4.4.3 Neighbourhood Centres

A 3.8 ha (9.4 ac) site on the north side of 64 Avenue NE to the east of 60 Street (Taradale - Cell B) was designated for development of a neighbourhood shopping centre in 1982.

Local shopping needs within Saddle Ridge will require retail centres in Cells A, B and C. These neighbourhood centres should be located on collector roads, and should be easily accessible to those portions of these residential cells, and of Cell D, that are most remote from the proposed town centre. Specific locations and site areas of these facilities shall be established through the outline plan process.

4.5 Major Employment Areas

4.5.1 Industrial

Cell F, that portion of the Saddle Ridge area lying to the west of the proposed 36 Street Expressway, is located within the Airport Vicinity Protection Area. The A.V.P.A. Regulation assumes that a new north-south runway will eventually be constructed immediately to the west of existing 36 Street, and on this basis the 30 N.E.F. contour precludes further residential development within Cell F.

The location of Cell F relative to the airport makes this area highly suitable for a wide range of industrial uses, similar to those in existence to the south of the airport. However, since the status of the proposed new runway remains uncertain at present, and inasmuch as no commitment has been made either to extend water and sewer services to Cell F or to construct the 36 Street Expressway, limited-serviced industrial will be the most appropriate use in this area. Accordingly, a gradual transition from the current mix of limited-serviced industrial and residential uses should be allowed for. *The ultimate land use for these lands is a fully-serviced general light industrial area built to or above the standards of other I-2 areas in the city. Area landowners are encouraged to undertake cooperative planning to ensure services are extended into the area as early as possible. (Bylaw 15P97, 1997 June 16.)*

In order to protect remaining residents within the proposed industrial area, it is important that excessive nuisance effects generated by the industrial uses be minimized. To this end the following guidelines shall be taken into account by the Approving Authority in considering proposals for industrial development:

1. Industrial uses shall be sited as far away from dwellings on other properties as practical, and any dust or noise shall be contained within the site to the greatest extent practical.

2. Screening shall be provided in order to minimize the visual impact of industrial activities on adjacent residential properties. Such screening could include fencing, berming and/or landscaping.

3. Sites which abut major thoroughfares in the area (e.g. 36 Street NE, 80 Avenue NE, *36 Street Expressway) (Bylaw 15P97, 1997 June 16)* shall provide landscaping and/or additional screening adjacent to the major thoroughfare.

Future industrial development adjacent to the proposed 36 Street NE Expressway shall provide a 15 metre wide landscaped buffer along the east edge of the development including suitable berming and/or planting to effectively screen the industrial development from the future Expressway (e.g. a 4 foot berm with a 6 foot wood fence on top).

Industrial development in areas adjacent to residential communities shall be visually attractive and compatible with the adjacent housing. It should strive to create an image which doesn't detract from nearby residential development. The design, character and appearance of buildings shall be compatible with the adjacent area and the buildings should be constructed of durable materials to maintain the initial quality throughout the life of the development. (Bylaw 15P97, 1997, June 16).

In addition to the above, applicants for development permits for industrial uses shall be required to sign deferred servicing agreements satisfactory to the City Engineer prior to release of the permits.

The following additional policies are established to address the current problems of street flooding and associated maintenance costs to The City and to ensure that industrial uses are handled in a sensitive manner so that there is no adverse impact on the adjacent residential development to the east.

a) *Future industrial development on parcels fronting onto the existing unpaved roads in Cell F requiring the use of heavy trucks (e.g., vehicles over three tons) shall not be allowed until such time as these roads are paved. This will help ensure that additional damage to the unpaved roads used by heavy trucks is minimized.*

b) *Future industrial development on site adjacent to a purely residential use in another district abutting the Saddle Ridge Industrial Area shall not include uses or operations involving hazardous materials.*

c) *Future limited-serviced industrial development in Cell F shall include on-site stormwater retention ponds designed to the satisfaction of the City Engineer. These on-site stormwater retention ponds may be phased out after The City has established a stormwater management system to service the overall Cell F area.*

d) *Penalties will be imposed against landowners/ developers discharging stormwater from their properties onto adjacent roads and other private properties.*

e) *The Engineering & Environmental Services Department will finalize, as a matter of priority, stormwater retention pond locations relative to Cell F as an integral part of the overall storm drainage system.*

f) *No industrial development will be allowed in Cell F north of 80 Avenue NE before a storm drainage system for the area south of 80 Avenue NE is in place and can be extended to service lands north of 80 Avenue.*

g) *Where feasible, the owners of currently-developed industrial parcels in Cell F shall be required to construct on-site stormwater retention ponds designed to the satisfaction of the City Engineer.*

h) *The Engineering & Environmental Services Department shall ensure that the on-site stormwater retention ponds required for future industrial development in Cell F are actually constructed when the development occurs.*

i) *If necessary and where possible, the Engineering & Environmental Services Department will improve the roadside ditches in Cell F to accommodate stormwater runoff from the streets to avoid street flooding.*

j) *Landowners/developers wishing to utilize the current servicing capacity available in The City's storm and sanitary sewer mains located with the proposed 36 Street NE Expressway right-of-way should be encouraged to do so through a Local Improvement Bylaw, particularly for future 1-2 General Light Industrial uses.*

k) *The Engineering & Environmental Services Department will continue discussions with the landowners concerning local improvements in Cell F.*

l) *In addition to the above policies, the DC Direct Control District development guidelines contained in Bylaw 16Z84, adopted by City Council on 1984 May 14, shall apply. (Bylaw 36P97, 1998 March 16.)*

4.5.2 Industrial/Office Park

The western portion of Cell E, comprising approximately 93 ha (230 ac), is designated for an industrial/office park which could accommodate a mixture of wholesaling/warehousing, light manufacturing and office developments. Although this area would also be suitable residential development, its location adjacent to two expressways which will provide easy access to the airport make it particularly attractive for the proposed uses.

Office developments with a high concentration of employees should be encouraged in those portions of the "park" in close proximity to the proposed LRT station, in order to take maximum advantage of this transportation facility.

4.6 Open Space, Parks and Recreational Facilities

The open space system in Saddle Ridge will include the various joint-use sites, parks/significant natural areas, dry ponds for stormwater storage, a regional park in Cell F and a network of pedestrian/bicycle pathways linking the above facilities.

The reserve land for open space must first and foremost be located, designed and built to meet the communities' needs for open space or other reserve purposes. The exact boundaries of such open spaces will be determined at the outline plan stage. Dry ponds for stormwater storage may only be included in reserve land in accordance with the current policy regarding the Design Guidelines for MR and MSR Sites Containing Dry Ponds. (Bylaw 7P93, 1993 May 10.)

Tot lots shall be incorporated into all residential subdivisions in accordance with City policy.

Major regional playfields of approximately 8 ha (20 ac) will be located immediately southwest of the Town Centre and adjacent to the High School. In view of this, all or a major portion of the existing Saddle Ridge community association site in Cell F, originally considered for the playing field use, is proposed for disposal for industrial development once alternate community facilities to meet the needs of Saddle Ridge residents are provided.

The community facility site in the Town Centre will be designed to serve the needs of the residential areas in Cells B, C, D and possibly A and E, should it develop residentially. Additional community park space in the order of 8 ha (20 ac) will be located in each residential cell in conjunction with a school site. (Bylaw 15P97, 1997 June 16.)

4.7 Pedestrian/Bicycle Pathways

The proposed regional pedestrian/bicycle pathway alignment is illustrated on Map 6. The regional pathway will interconnect the four planning cells with each other and help connect the open space system with the Town Centre. (Bylaw 15P97, 1997 June 16.)

The specific locations of pedestrian and bicycle pathways shall be determined at the outline plan stage.

The portion of Cell E immediately east of 44 Street NE currently contains a number of small wooded areas in low lying locations. The regional pathway system, when developed, should attempt to protect these areas by either incorporating them into a linear park system or retaining them within individual developments through development control guidelines. It is expected that the lands will be acquired through the normal subdivision dedication procedures. (Bylaw 15P97, 1997 June 16.)

5.0 TRANSPORTATION

5.1 Major Roadway Network

The City of Calgary is presently undertaking an update of the Northeast Transportation Study (N.E.T.S.) approved in 1976, the recommendations of which were incorporated into the Transportation System Bylaw 3M82 as well as into the Airport Phase 3 Design Brief.

The major road system as shown in Maps 6 and 7 incorporates preliminary recommendations of the N.E.T.S. update, and accommodates access requirements of the airport as put forward in the *Calgary Area Aviation Master Plan. (Bylaw 18P90, 1990 September 10.)*

During the early stages of development, roadway access to Saddle Ridge will be provided primarily by 60 Street NE (a northerly extension of Falconridge Boulevard), as well as by the existing 36 Street and 80 Avenue. The 36 Street Expressway will eventually become the main access route to Saddle Ridge, with 60 Street reverting to a supporting role. Present plans call for grade-separated interchanges on this roadway at McKnight Boulevard, 64 Avenue and the 96 Avenue Expressway, with at-grade intersections at 80 Avenue and 88 Avenue.

The 96 Avenue Expressway will interconnect the East Freeway and Deerfoot Trail, providing access to both the Saddle Ridge and Northridge areas and to the Airport. The preferred alignment will run along the north side of the Airport, as shown in Map 7. Grade-separated interchanges will be located at 60 Street and the 36 Street Expressway as well as at a location close to the Airport terminal to be determined in conjunction with Transport Canada.

The East Freeway is part of the ring road proposed within the T.U.C., of which Stoney Trail to the north is another component. Ultimately this ring road will interconnect Highway No. 1 (Trans-Canada Highway) to the east and west of Calgary and with Highway No. 2 to the north and south. The East Freeway will connect with Stoney Trail approximately 3.2 kilometres (2 miles) north of Saddle Ridge.

A major road, approximately along the 88 Avenue alignment, will provide access to the potential regional centre and the business park in Cell E. The intersections at the 36 Street Expressway and at 60 Street will be signalized.

Development in Cells E and F may generate traffic volumes which overtax the 88 Avenue/36 Street Expressway intersection, as well as the interchange at the 36 Street and 96 Avenue Expressways. Consequently, additional road access may be required connecting the employment district and potential regional centre directly to the 96 Avenue Expressway at a point to the west of the future 36 Street Expressway interchange.

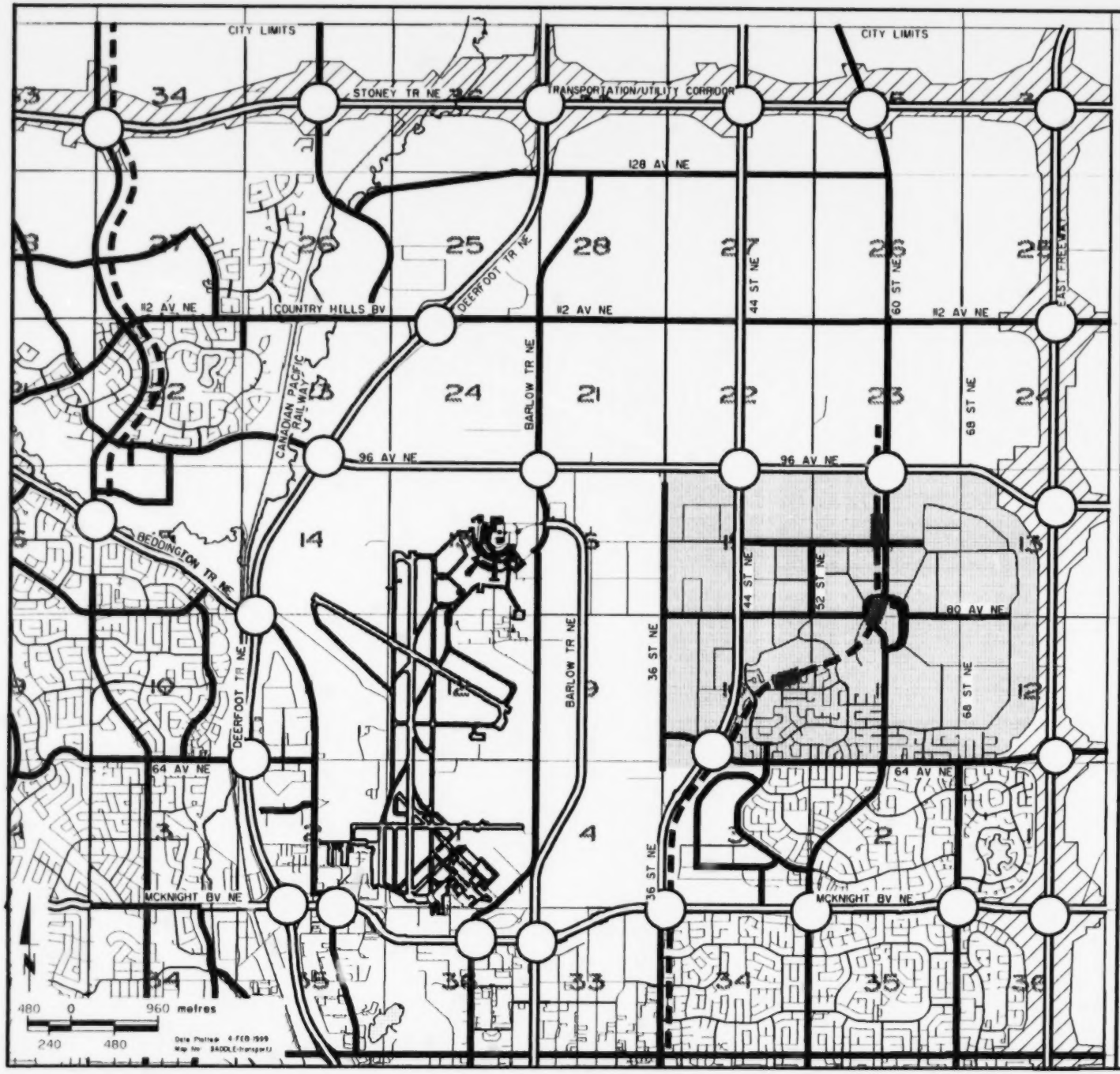
Noise attenuation along major roads and expressways shall be provided in accordance with the Surface Transportation Noise Policy for the City of Calgary, as adopted by City Council in April, 1983.

5.2 Internal Circulation

Access to the local streets within the residential cells will be provided by collector roads from the major streets, Falconridge Boulevard NE (60 Street) and 80 Avenue NE as shown in Map 6. (Bylaw 15P97, 1997 June 16.)

In Cell F, the industrial area, the road alignments south of 80 Avenue will likely remain substantially the same as at present, with 40 Street being the principal access route off 80 Avenue and tying back to 36 Street to the south. Considerable upgrading (widening, paving, etc.) will be required as new development occurs. North of 80 Avenue the internal road system will be established through outline plans. Subsequent to construction of the 36 Street Expressway the existing 36 Street will remain as a major road, distributing traffic to and from the industrial area, as well as serving possible future development on the Airport lands to the west.

The future road network, particularly the 36 Street Expressway will remove or restrict local access to a number of parcels in Cell F. Applicants for outline plan or development permit approval will be advised that an alternative local road pattern will be established in the area through the 36 Street Functional Study.



Saddle Ridge ASP

Map 7

PROPOSED NORTHEAST TRANSPORTATION NETWORK

– CONCEPTUAL –

Legend

- Area Structure Plan Study Area
- Transportation Utility Corridor
- Freeway or Expressway
- Major Street
- Interchange
- L.R.T. and Stations

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All collector road alignments shown in Map 6 are conceptual only. Final alignments shall be established at the outline plan stage.

5.3 Light Rail Transit

The portion of the LRT line within Saddle Ridge, south of 80 Avenue NE represents an innovative approach as the LRT line will be located within the residential community rather than following either a major roadway or a railway alignment.

There will be three stations within Saddle Ridge. The first station which will be in the area west of Martindale will be low scale and served by feeder bus and walk-on passengers. The second station will be in the Town Centre and will have some commuter parking as well as bus and car passenger drop off areas. Provision will be made for extensive LRT parking close to the third station in the proposed employment area south of the 96 Avenue Expressway. (Bylaw 15P97, 1997 June 16.)

Stations within Saddle Ridge will be spaced relatively close together (roughly 800 to 1,000 metres), and access will be primarily by feeder bus or walk-on. Extensive park-and-ride facilities will be provided at the northern terminus and at the Castleridge station south of 64 Avenue. *However, if a decision is made to locate a regional centre in Northridge rather than at the Saddle Ridge site (designated "under policy review"), then the LRT line would likely extend to the north of 96 Avenue NE to a terminus within the approved regional centre. (Bylaw 18P90, 1990 September 10.)*

It is important that the Town Centre develop as an intensive mixed use community core generating and supporting transit ridership. Medium density residential development within walking distance to the LRT is basic to achieving the City's goals of increased transit use.

The Cell E LRT station area will also provide opportunities for the creation of a higher density node incorporating commercial and residential development. (Bylaw 15P97, 1997 June 16.)

In order to minimize the potential barrier effect of the LRT line through the residential community, alternatives to extensive chain-link fencing of the right-of-way will be investigated. The line could also be screened visually by trees and shrubs. Pedestrian/ bicycle pathways should be aligned along the LRT right-of-way wherever possible, with at-grade crossings at controlled points, including the collector road crossings.

It is unlikely that the LRT line will be built until such time as development of Saddle Ridge is well under way. Portions of the right-of-way for the LRT may be used as a bus route prior to LRT construction for interim use.

5.4 Bus Service

Local feeder bus service in Saddle Ridge will be oriented toward providing access to the LRT stations via the collector roads. A crosstown bus route will also be extended along 60 Street from the Falconridge/ Castleridge and Properties communities to the south.

In Cell F, a north/south spine road of an Industrial Collector Standard along the 40 Street NE alignment is required between 64 Avenue and approximately 92 Avenue NE. Connectors running east from the spine road to the proposed 36 Street NE Expressway alignment will be required at 88 Avenue and 92 Avenue NE. Interim routing will be along 80 Avenue NE.

An industrial feeder route from one of the proposed LRT stations will provide bus service to Cell F at such time as employment in the industrial area generates sufficient demand.

Roadways having transit service operating on them must be designed to include sidewalks along both sides. Roadways feeding the bus route must be designed with sidewalks along one side. (Bylaw 36P97, 1998 March 16).

Prior to extension of the LRT line into Saddle Ridge the area will likely be served by feeder buses from the LRT station south of McKnight Boulevard, as well as by the 60 Street crosstown service. The feeder services may utilize portions of the LRT right-of-way within Saddle Ridge wherever possible.

6.0 MUNICIPAL SERVICES AND UTILITIES

6.1 Water Supply

The Saddle Ridge area lies within the North Hill pressure zone and development can be accommodated by connections to the existing distribution system followed by feedermain reinforcements as required to minimize disturbance in built-up areas and to maintain acceptable levels of service.

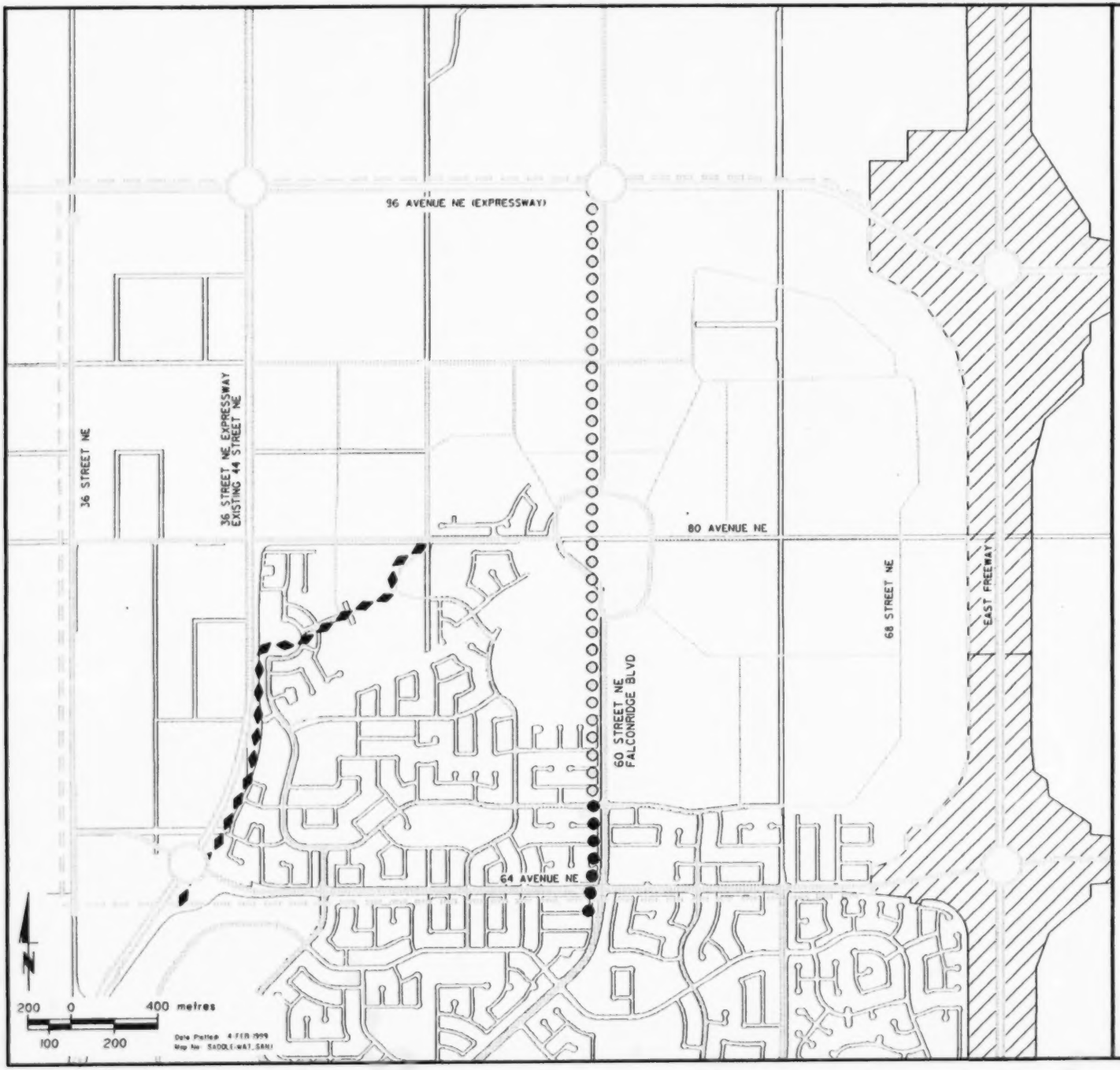
A 900 mm feedermain extension north of Falconridge Boulevard NE from Taradale Drive to 80 Avenue (budgeted for the 1998) will allow for development, as far north as 96 Avenue NE. As the ASP area approaches full development, a further reinforcement feedermain may be required from McKnight Boulevard to 80 Avenue on 36 Street, heading east on 80 Avenue and tying into the proposed 900 mm on Falconridge Boulevard.

The ultimate water supply plan for northeast Calgary requires further extensions of the feedermain north on Falconridge Boulevard to 112 Avenue NE and west on 112 Avenue NE connecting to the existing Beddington Reservoir just west of 4 Street NW. (Bylaw 15P97, 1997 June 16.)

6.2 Sanitary Sewers

Map 8 shows the sanitary sewer trunk alignments to serve the Saddle Ridge area. Future adjustments to these alignments will not require amendments to this plan. (Bylaw 7P93, 1993 May 10.)

Sanitary sewer service will not be required immediately in Cell F, since the limited-serviced industrial activities can be serviced with holding tanks. However, applicants for development in this area shall be required to enter into deferred servicing agreements which will stipulate that they be assessed their fair portion of the costs at such time as sanitary sewer services are extended into the area.



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MAP 8

WATER SUPPLY and SANITARY SEWERS

-CONCEPTUAL-

Legend

- Area Structure Plan Boundary
- Transportation Utility Corridor

WATER SUPPLY

- Existing Feedermain
- Proposed Feedermain

SANITARY SEWERS

- Proposed Trunk

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6.3 Stormwater Management

Stormwater from the Saddle Ridge development area will be drained to the McKnight Boulevard storm sewer trunk system. This drainage scheme will obviate the need for construction of a new storm sewer trunk to Nose Creek at a major cost.

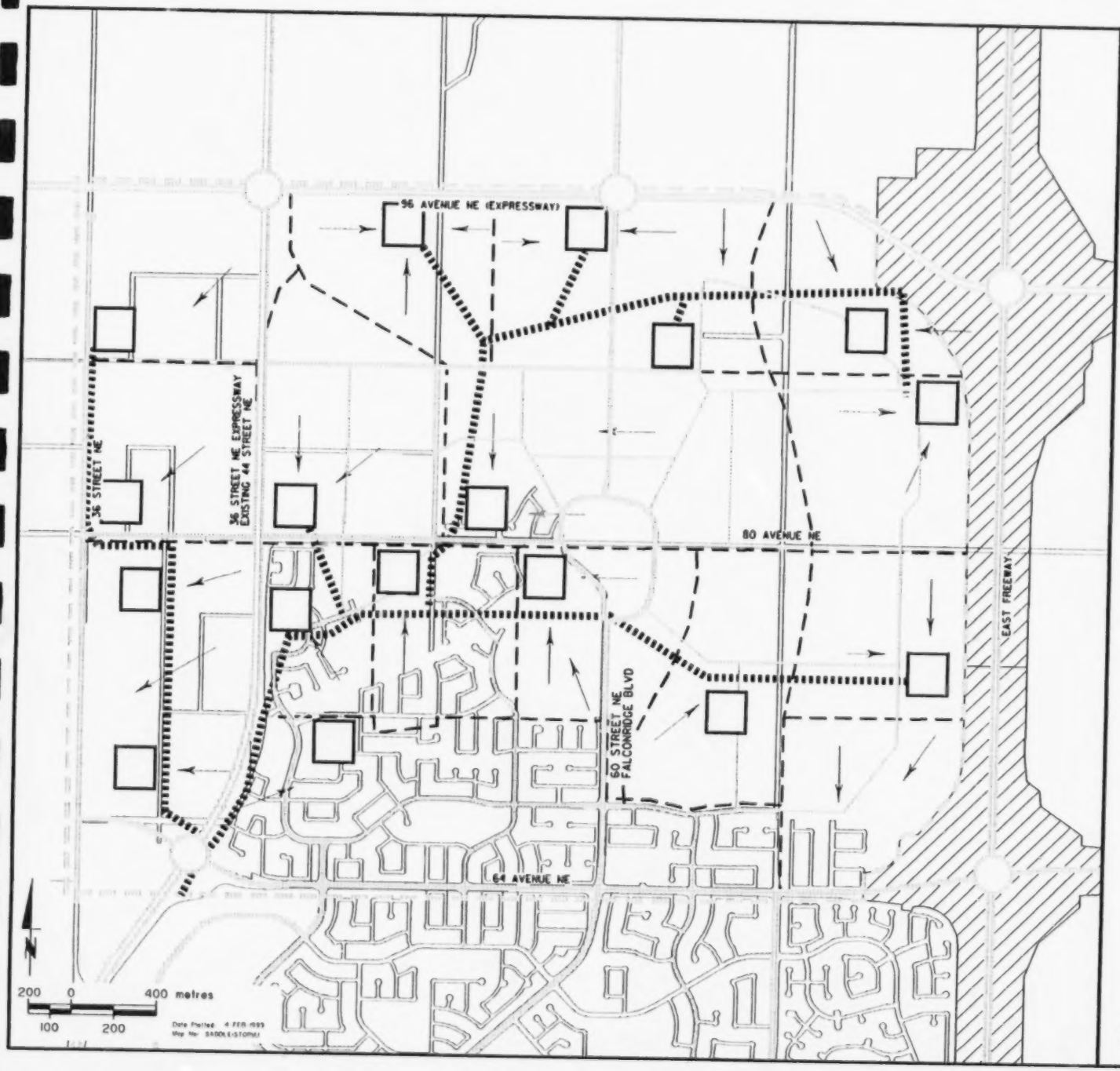
There is inadequate capacity in the McKnight Boulevard storm sewer for direct discharge from the Saddle Ridge area. Therefore, peak storm discharge from the development area will be restricted to 1.71 litre/second/hectare. (Bylaw 15P97, 1997 June 16.) The excess water will be stored in stormwater management ponds. At present, dry ponds are recommended for the development area. However, stormwater quality improvement may be required by Alberta Environment in the future and wet ponds or other water quality improvement may also be required.

All stormwater management ponds and major overland drainage routes are to be designed to accommodate a 100 year flood event.

The locations of dry storage ponds, primary and secondary storm sewer trunks and the subcatchment boundaries shown on Map 9 are conceptual only. Therefore, future adjustments to the dry pond storage concept will not require amendments to the Saddle Ridge Area Structure Plan. The developers shall be required to prepare, to the satisfaction of the City Engineer, detailed stormwater management plans for the subcatchment areas prior to development. (Bylaw 7P93, 1993 May 10.)

6.4 Electrical

The location of the 138 kV transmission line which will supply electrical service to Saddle Ridge is shown in Map 10. This 138 kV line will be on wooden poles within an 18 metre (60 foot) right-of-way immediately west of the present city limits, and will supply substation #48, which is to be constructed in the southeast corner of Section 23 immediately north of Saddle Ridge. Local service will utilize overhead 25 kV feeder lines.



Saddle Ridge ASP

MAP 9

STORMWATER MANAGEMENT

-CONCEPTUAL-

Legend

- Area Structure Plan Boundary
- Transportation Utility Corridor

Storm Sewer

- Stormwater Ponds
- Trunks
- Drainage Area Boundary
- Direction of Flow

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6.5 Natural Gas

The proposed natural gas servicing system is illustrated in Map 10. The area will be fed by a north-south intermediate pressure main within the 60 Street right-of-way. The existing high pressure pipeline along *68 Street NE (Bylaw 18P90, approved 1990 September 10)* is located within a 15-metre (50 foot) easement. A 15-metre setback is required between this pipeline and any habitable building. This line will feed a proposed regulator station to be located north of Saddle Ridge, from which the intermediate pressure main on 60 Street will supply Saddle Ridge. No problems are anticipated regarding the provision of natural gas servicing provided that the sequence of development is generally from south to north.

6.6 Telephone

The proposed main telephone conduit to service Saddle Ridge will be located within the 60 Street right-of-way, as illustrated in Map 10. The area will be serviced from the Temple Exchange in the Properties, and local service lines will follow collector roads and local streets. No problems are anticipated regarding the provision of telephone servicing, provided that the sequence of development is generally from south to north.

7.0 COMMUNITY SERVICES

7.1 Public Health

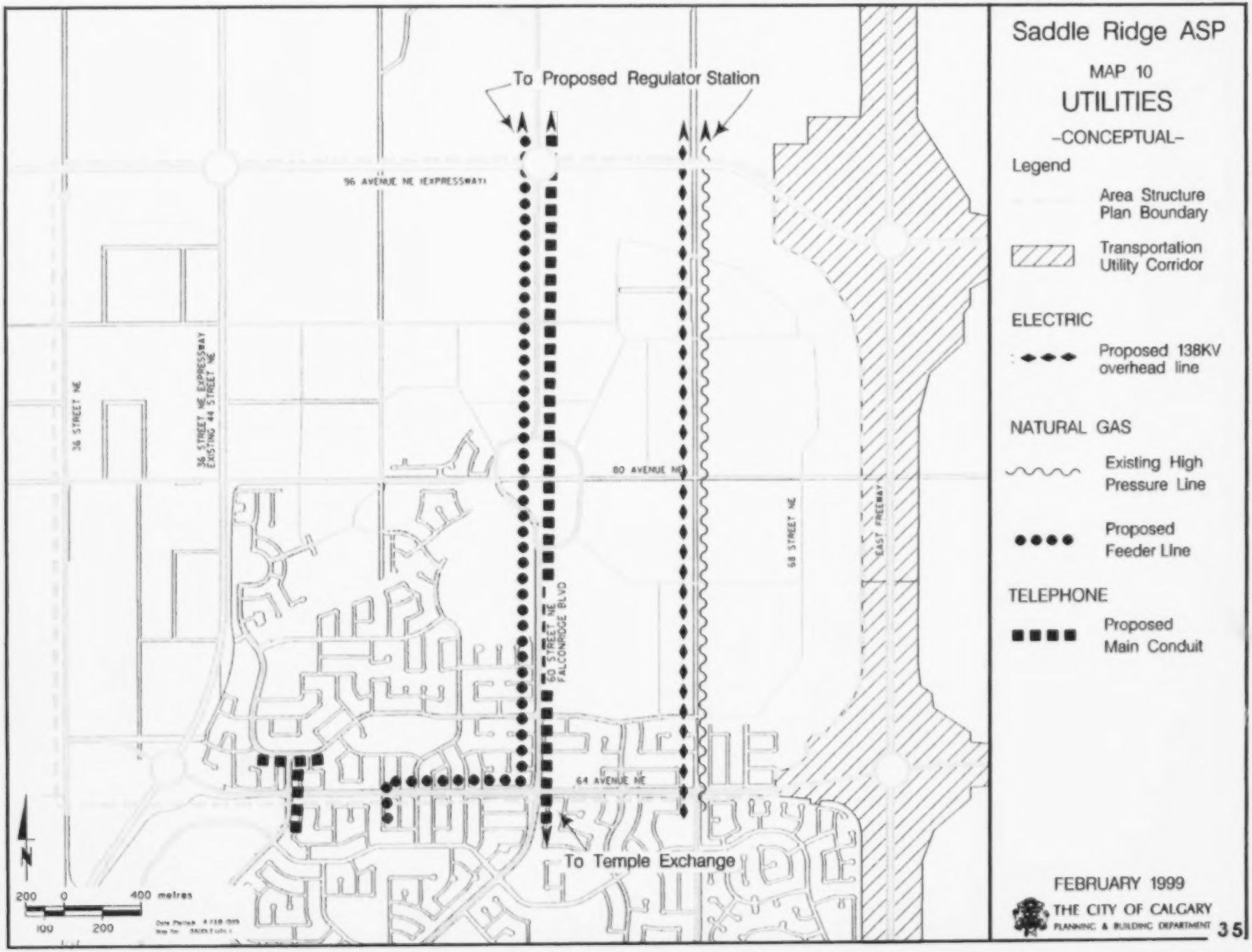
The Calgary Local Board of Health operates offices serving northeast Calgary in both Forest Lawn and the Properties. These facilities will provide the necessary services for the Saddle Ridge community.

The nearest hospital will be located on 36 Street NE immediately north of 16 Avenue.

7.2 Social Services

The City of Calgary Social Services Department either provides, or coordinates the provision of, a wide range of social services. These include juvenile probation, community outreach, day care and family education programs.

A small Social Services office has recently been opened in Village Square Leisure Centre in the Properties, and will service the northeast sector for several years. Ultimately, however, a new office will be required further north to serve Saddle Ridge. A location and timing for this new office has yet to be established.



Saddle Ridge ASP

MAP 10

UTILITIES

-CONCEPTUAL-

Legend

Area Structure Plan Boundary

Transportation Utility Corridor

ELECTRIC

Proposed 138KV overhead line

NATURAL GAS

Existing High Pressure Line

Proposed Feeder Line

TELEPHONE

Proposed Main Conduit

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7.3 Library

A public library branch requiring a site of approximately 0.8 ha (2 ac) will be required at a central location within Saddle Ridge as the area approaches full development. In the meantime the Village Square Library will serve the area adequately.

7.4 Police

The Calgary Police Department will continue to service all of northeast Calgary from the existing District Office at 3207 - 12 Avenue NE. No additional stations will be required in Saddle Ridge, even with full development.

7.5 Fire and Ambulance

A new fire station will eventually be required in Saddle Ridge, although the location has not yet been established. Prior to construction of this station, fire protection will be provided from Station #22 at 7199 Temple Drive NE.

Presently, ambulance service is provided from Fire Station #22. A separate ambulance station will be established in the northeast in the near future and in conjunction with a "floating" city-wide ambulance service will serve the Saddle Ridge area.

8.0 THRESHOLDS AND SEQUENCE OF DEVELOPMENT

Inasmuch as roads, municipal services and utilities will generally be extended into Saddle Ridge from the south, development of the area will preferably proceed from the south to north. It is likely that Cell B will develop prior to Cell A due to the anticipated staging of sewer extensions. At the time this Area Structure Plan was adopted the City of Calgary had made no commitments to extend either water feedermains or sewer trunks north of their existing limits at 67 Avenue and 60 Street NE, and at McKnight Boulevard and 36 Street NE, respectively.

Roughly half of the ultimate population capacity of 50,000 can be accommodated by waterworks improvements already committed for the Falconridge and Castleridge communities to the south. However, sanitary and storm sewer capacity is presently available only for development of the Martindale and Taradale subdivisions. The City has made no commitment to construct any of the trunk sewers or stormwater retention lakes required for development beyond those presently approved for Martindale and Taradale.

The maximum population which can be accommodated in Saddle Ridge without overloading the capacity of the transportation system downstream (i.e., towards the downtown area) is in the order of 16,500. Therefore, in considering whether or not to approve land use redesignations within Saddle Ridge which might result in this threshold being exceeded, City Council will have three options from which to choose:

1. Approve the application and, concurrently, approve improvements to the transportation system as recommended by the Transportation Department;

2. Refuse approval of the application, thereby forestalling the need for transportation improvements; or

3. Approve the application, but defer approval of the recommended transportation improvements, recognizing that this decision could result in heavy traffic congestion on particular roadways.

Cell F is suitable for limited-serviced industrial development immediately, in accordance with the conditions outlined in Section 4.5.1 with regard to protection of the existing residences in the area.

The thresholds established above are based upon the best information available at the present time, and may be subject to revision. Development will be monitored through the outline plan process, and the Approving Authority will be informed as the population thresholds are being approached.

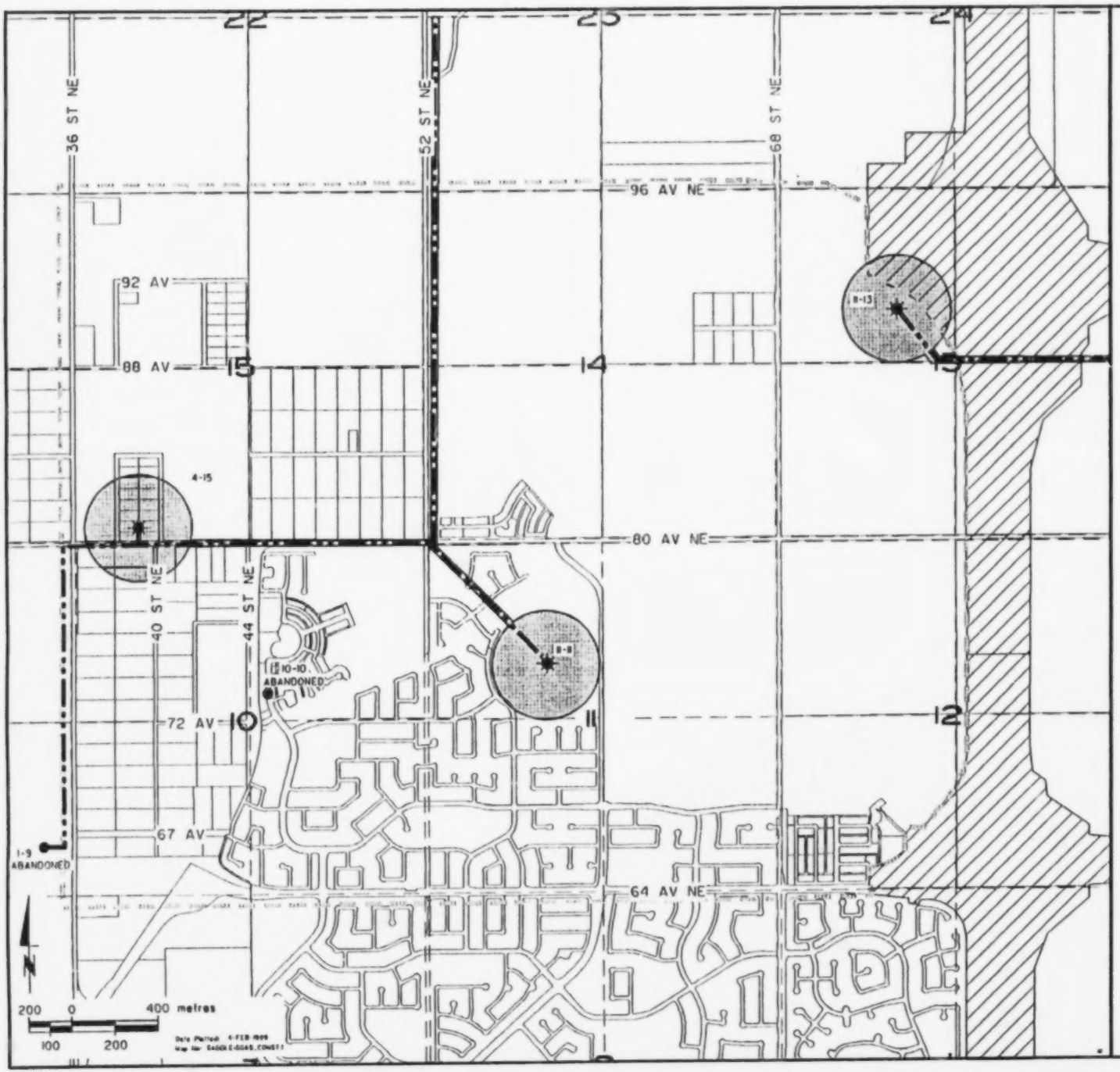
8.1 Sour Gas Constraint Areas

The Energy Resources Conservation Board Decision Report of 1983 June 18 respecting development in Saddle Ridge included the following statement:

"The Board believes that a phased development plan to minimize co-existence is not required for public safety but would be desirable to avoid nuisance impacts on residents from the sour gas facilities. Phased development would lower the impact of the noise and odours created by well workovers, flaring and day-to-day sour gas operations."

In this regard, a development constraint area of 300 metres from wells and 30 metres from pipelines has been established and is shown on Map 11. Residential development or other urban density uses within this constraint area will not be permitted until such time as the sour gas wells and pipelines associated with the area are abandoned. The portion of Cell F within the constraint area may be developed for limited-serviced industrial uses as outlined in Section 4.5.1. In addition, major services (including storm retention ponds) and roads may be located within the constraint areas around the wells when required to serve adjacent developable areas. There is no sour gas constraint on development outside the constraint areas as identified on Map 11.

The precise limits of each constraint area will be determined at the outline plan stage. In this regard, outline plan proposals shall be referred for comment to the Saddle Ridge Development Liaison Committee, whose comments shall be forwarded to the appropriate Approving Authority for consideration prior to any approvals being granted. In the case of abandoned sour gas wells or pipelines, the affected landowners/developers wishing to develop their respective lands, shall consult with the E.R.C.B and the operator of the abandoned well/pipeline concerning their development proposals. No buildings or other structures shall be constructed over abandoned sour gas wells or pipelines without the written consent of the E.R.C.B. (Bylaw 18P90, 1990 September 10.) In addition, any applications for land use amendments or development permits within the constraint areas shall be referred to the Liaison Committee for comment and the comments received referred to the appropriate Approving Authority. (Bylaw 11P85, 1985 July 22.)



Saddle Ridge ASP

MAP 11

SOUR GAS CONSTRAINT AREA

Legend

- Area Structure Plan Boundary
- Transportation Utility Corridor
- Sour Gas Pipeline
- Constraint Area
- Abandoned Sour Gas Well
- Sour Gas Well

Setback from Gas Wells is 300 metres

Setback from Gas Pipelines is 30 metres

FEBRUARY 1999

THE CITY OF CALGARY
PLANNING & BUILDING DEPARTMENT

Supporting Information

Appendix 1

ENGINEERING DEPARTMENT REPORT

SERVICING COST IMPLICATIONS FOR SADDLE RIDGE

1984 JANUARY 03

This Engineering report prepared by the Engineering Department is being forwarded to C.P.C. and Council as an information document in conjunction with the Saddle Ridge Area Structure Plan, in an effort to give the approving authorities a full understanding of the servicing implications associated with development of the Saddle Ridge area.

SERVICING COST IMPLICATIONS

The servicing of Saddle Ridge will generally be accomplished by the creation of new infrastructure systems as opposed to extensions of existing facilities. This is particularly true for the storm and sanitary sewer systems in that new acreage assessment catchment areas will have to be established. The waterworks and road networks tend to serve the north east in general; to the extent that the infrastructure in place to date is capable of handling the existing and/ or approved for development demands. If Saddle Ridge is prematurely brought on stream, then the ultimate effect is demand thresholds are crossed and the City is forced to front-end major upgradings to improve these two systems.

The net effect on the costs to the City of creating these new sewer systems or crossing thresholds for the others is to create both a high front end development cost coupled with obligations that could approach $48,427,000 (1983) at the time the City commits to servicing the first phase of Saddle Ridge. Granted, the obligations will occur over time; however, the City will still be obligated to an initial cost in the order of $19,155,000 (1983) to complete the developer's proposed Stage 1 (generally considered Cells A and B). Some of the City's costs, particularly the road network, obviously don't provide benefit to just Saddle Ridge; but also to areas such as Northridge; however, as long as Saddle Ridge does not develop, the front-end cost can be deferred.

A breakdown of the infrastructure costs is attached as Appendix 1 as well as maps indicating the facilities, (Appendix 2).

ANALYSIS

A number of factors should be considered when reviewing the City's cost implications for initiating development in the Saddle Ridge area. These include:

1. Historically, the development of Saddle Ridge was constrained by the presence of sour gas, which caused the long range servicing planning for the area to establish a number of boundaries and thresholds that generally coincide with the southern boundary of Saddle Ridge. Having all these boundaries coincide for the subject area means that, unlike a number of other areas within the City where development causes a City commitment on only portions of the infrastructure system at any given time, the Saddle Ridge area has all the City commitments aligned at the same place for the servicing of the first phase of Saddle Ridge.

2. The present location of the storm and sanitary sewer for Saddle Ridge is at the intersection of 36 Street and McKnight Boulevard. To serve the proposed first phases of Saddle Ridge requires the extensions of these systems past the Westwinds Industrial Area, a distance of between one and two miles. The residential market in the north east is developing faster than the industrial market and, as such, the first phases of Saddle Ridge are in essence leap frog development, heavily increasing the City's initial costs.

3. Traditionally, the north east sector of the City has been known for its affordable housing and to a certain extent this has been based on the low infrastructure costs required to accommodate existing development. This is no longer the case for Saddle Ridge. The systems costs for Saddle Ridge, particularly the storm sewer (with its associated retention lake facilities), will mean that with all other things being equal, the Saddle Ridge area will become less affordable given these higher servicing costs.

The City, based on the balanced growth strategy policy of the last few years, has constructed a number of major servicing systems in other parts of the City which are largely under utilized at the present time. The Engineering Department believes that it is only prudent, based on the current economic times, that new development within the City be concentrated in those areas already serviced, to enable the City to recover more of their front-end costs without incurring additional liabilities. The construction of new development servicing systems has a major impact on the City's financial position and the reduction or deferral of these costs to a more economically justifiable time will greatly improve the City's overall position.

The Planning & Building Department as part of the present annexation studies, has been instructed to undertake the first phase of a three part Growth Management Study. This study is aimed at providing answers to how Calgary will best expand in the future. The Planning Department has confirmed that included in its study is a review of density variations and infrastructure economics (considering both the facilities in place to date and new systems required for future corridor growth, etc.) to better enable the Administration to assess the timing requirements for developing new sectors of the City such as Saddle Ridge, based on optimizing the City's overall objectives.

CONCLUSIONS

The Engineering Department has studied the servicing cost implications for the Saddle Ridge area and has concluded that based on today's economics and the City's major front-end commitments for the initiation of development, that development not proceed in Saddle Ridge at this time. The Department has no objections to the planning process being completed, as this process will be of benefit to the City and the landowners affected; however, the landowners should clearly realize that development in Saddle Ridge is contingent upon a heavy financial input from the City and such will not be forthcoming until appropriate budgets can be justified and are approved some time in the future.

APPENDIX I

CITY SERVICING COST ESTIMATES

	PHASE 1	LATER PHASES
Waterworks		
Booster Station	$ 800,000	
Nose Creek Line		$12,075,000
Sanitary Sewer		
36 Street (to 70 Avenue)	1,874,000	
36 Street and 80 Avenue		750,000
Storm Sewer		
36 Street and 70 Avenue	4,331,000	
36 Street and 80 Avenue		1,847,000
Storm Lakes		
Lake 1	1,950,000	
Lake 2		3,100,000
Lake 4	4,800,000	
Roadways		
McKnight Boulevard (36 Street/52 Street)	2,100,000	
36 Street (McKnight/64 Avenue)	3,300,000	
36 Street (64 Avenue/80 Avenue)		2,600,000
Interchange (Barlow Trail/ 36 Street)		8,000,000
McKnight Boulevard - 6 lanes (Barlow Tr./36 Street)		900,000
TOTAL	$19,155,000	$29,272,000
GRAND TOTAL		$48,427,000

Appendix 2

ENERGY RESOURCES CONSERVATION BOARD
Calgary, Alberta

PUBLIC MEETING TO CONSIDER CONCERNS REGARDING THE DEVELOPMENT OF THE DECISION D83-6

PROPOSED SADDLE RIDGE AREA PROCEEDING 821207

1. INTRODUCTION

The Energy Resources Conservation Board (the Board) received a request from the City of Calgary on 14 June 1982, to provide recommendations respecting the development of the Saddle Ridge area in northeast Calgary where there are a number of sour gas wells and pipelines. The Board considered the matter and subsequently met with City representatives on its position in a letter of 17 September to the City. The areas where the Board recommended that development not occur are shown in Figure 1 and generally reflect a separation distance of 0.5 kilometres (km) between residential development and existing sour gas wells and pipelines. The Board's letter also set out alternatives to illustrate setback distances between possible relocated sour gas facilities and proposed residential development.

As a result of the September 17 letter, the Board received a letter from Mr. A. Froese of Kentron Development Corporation Ltd., which requested that a meeting be arranged to discuss the proposed setback distances. A meeting was then held to review the matter with representatives of the land developers, gas operators, City of Calgary and the Board attending.

At that meeting, it was decided to defer consideration of the setback distances and schedule a public meeting where all interested parties could present their views to the Board. The public meeting took place in Calgary on 25-26 January and 14-15 March 1983 with V. Millard, G.J. DeSorcy, P.Eng. and V.E. Bohme, P.Eng. sitting. Appendix A is a list of those who appeared at the meeting.

2. LEGISLATION

Requirements governing separation distances between sour gas facilities and land development are enacted by both the ERCB and the Alberta Planning Board.

The current minimum distance requirements for separating new sour gas facilities from existing residential and other land development are set out in the ERCB's Interim Directive ID 81-3. The separation distance is a function of the volume or rate of hydrogen sulphide (H_2S) that could be released in case of a malfunction of the facility.

The Subdivision Regulations made pursuant to the Planning Act, 1977, set separation distances for new residential or urban developments from existing sour gas facilities identical to those in ID 81-3. It also grants the ERCB the authority to designate the levels of sour gas facilities for separation purposes.

For subdivision applications, the Board furnishes the Subdivision Approving Authority with the classification of the sour gas facility and if necessary, associated recommendations. The Subdivision Approving Authority considers the recommendations of the Board as well as other referral authorities, but is not bound by them.

3. BACKGROUND ON SADDLE RIDGE

The Saddle Ridge area, shown on Figure 1, encompasses approximately 1130 hectares in the northeast corner of the city. The present land use is generally agricultural with limited residential acreages. There is some light industrial usage in the western portion of the Saddle Ridge area.

3.1 Sour Gas Facilities and Remaining Reserves

There are five producing sour gas wells within the boundaries of the proposed Saddle Ridge area development, four wells within the city and a fifth well outside the present city boundaries. The wells are producing from the Rundle B and Basal Quartz pools and one is injecting water into the Wabamun A Pool. The hydrogen sulphide content of the pools is very low, ranging from 0.4 per cent to 1 per cent, and the sour gas is transported by pipelines through the proposed Saddle Ridge area to the Petrogas processing plant located 5.5 km north of the area. The wells and pipelines are shown on Figure 1.

Production of gas from the area commenced in 1963 and the time of abandonment of the area is expected to be between 15 and 20 years hence. The following table details the producing pools for each well and their estimated life expectancy as calculated by Petrogas, Cathton and the Board. It also shows the remaining marketable reserves as estimated by the Board, assuming that production would continue until the time of normal economic abandonment.

TABLE 1 SADDLE RIDGE WELLS

Estimated Life Expectancy and Remaining Marketable Reserves

Well (Abbreviation)	Producing Pool	Life Expectancy	
Remaining Marketable Reserves			
Petrogas[a]	Cathton ERCB[b]		Years
106 m^3			
01-09-25-29 W4			
(1-9)	Rundle B	3-5	4 30
	Bsl Quartz B	10-15	65[c]
10-10-25-29 W4			
(10-10)	Bsl Quartz B	1-2	3 3
11-11-25-29 W4			
(11-11)	Rundle B	5-10	12-15 157
04-15-25-29 W4			
(4-15)	Rundle B	10-15	15-19 456
11-13-25-29 W4			
(11-13)	Rundle B	3-5 15	11-13 64
	Wabamum A		
	TOTAL 775		

a. The higher number assumes that wells are shut-in for part of the year while the lower number assumes continuous production.

b. Assumes continuous production throughout the year. The higher number assumes reduced proportion rates due to possible water problems late in the life of the well.

c. Recompletion required.

d. The 11-13 well is also used for Crossfield sour water injection into the Wabamum A Pool. This is one of two disposal wells that is critical to the operation of the plant and therefore the life of the well will be that of the plant.

The table indicates the relative importance of the 4-15 well from which it is estimated that approximately 60 per cent of the remaining reserves in the Saddle Ridge area may be recovered and the 11-11 well where approximately 20 per cent of the reserves may be recovered.

3.2 Saddle Ridge Development Proposal

Carma and Kentron indicated that the Saddle Ridge area should be developed commencing in 1984 or 1985 to fill a need for affordable housing in the northeast corner of the city. Although the two firms have interest in only some 450 hectares of the area, they have designed a development plan (Figure 2) which encompasses all land within the Saddle Ridge area, including the land owned by Cathon which is presently outside the city limits. The plan calls for construction of about 2500 residential units per year with an ultimate population for the Saddle Ridge area of some 60,000 people.

The City of Calgary agreed with the developers that the northeast is an economical area for expansion of the city because for the most part, it is readily serviceable. The City indicated that while the land is not urgently needed for development given the present market conditions, the need for a decision on setback distances is urgent because the planning process is lengthy.

3.3 Responses to Recommended Setback Distances

In the Board's letter of 17 September 1982 to the City of Calgary, a setback from the sour gas pipelines of 350 to 500 metres was proposed. The Board considered it appropriate to recommend larger separation distances than specified in ID 81-3 because it was concerned that high density urban development should not be located adjacent to and surrounded on most sides by sour gas wells and pipelines. The separation distances recommended by the Board were generally the next higher sour gas level than required by ID 81-3. For example, where the potential sour gas release volume was such that the facility qualified as a Level 1 facility, the Board used the separation distance for a Level 2 facility.

The developers indicated that the increase in setback distances required in the Board's 17 September letter sterilized in the order of 300 hectares from development, thereby rendering the entire Saddle Ridge area economically undevelopable. In addition, the developers suggested that the large separation distances could affect the Martindale subdivision located directly south of Saddle Ridge because servicing of the northern portions of that area might not be possible.

Certain landowners in the area expressed concern over the large setbacks and indicated that the wells should be abandoned or relocated. They stated that if they are denied their right to develop their land, due to the existence of sour gas facilities, the economic penalty should be assessed against the sour gas operator. They suggested that a cost/benefit analysis should be made to determine priorities by assessing the economic benefit accruing from the gas production compared to the economic cost suffered by the landowner.

Petrogas contended that the setbacks should be at least the 500 metres recommended by the Board to protect the public. It argued that the effect of reduced setbacks may be the early shutdown of sour gas facilities and the loss of reserves.

The City of Calgary indicated that it would rely on the Board's recommendation for the determination of the appropriate setback distance.

4. ISSUES

The Board considers the major issues to be:

- The appropriate separation distances from the existing sour gas facilities in Saddle Ridge.
- The need for special provisions within the setback area.
- The need for restrictions on the sour gas operationsin the area having regard for competing land use.
- The need for phasing residential development with the depletion of the gas reserves.

4.1 Separation Distances

Participants' Views

All participants indicated that residential development in Saddle Ridge should be separated from sour gas facilities. However, there was disagreement with respect to the appropriate setback distance with suggestions ranging from 20 metres to 500 metres or greater.

Dr. Leahey, on behalf of Carma and Kentron, suggested that the worst case scenario, as proposed by Petrogas, should not be used. Rather, he argued that the setback distance should be established by assessing personal risk and overall consequences of a sour gas release. He contended that a study of these matters indicates no serious risk or consequence to the public beyond some 20 metres from the pipelines.

The developers in general suggested the setback distance for Saddle Ridge should recognize that the sour gas content is barely one per cent and the H_2S release volumes for the wells and pipelines are low in comparison to the lowest category release (Level 1) specified in the Board's ID 81-3. The developers therefore proposed a 20 metre setback from the pipelines and a 100 metre setback from the wells.

The landowners generally supported Carma and Kentron while Mr. Longpre, representing the Saddle Ridge Business Association, suggested that if light industrial use, primarily outside storage, was not permitted within the setback area, the separation distance should be limited to the pipeline right of way.

Petrogas suggested that the Board recommend setbacks which correspond to the 100 parts per million (ppm) H_2S isopleth utilizing a worst case scenario. It stated that the primary use is safety and due consideration must be given to the number of people exposed to sour gas from a well or pipeline failure. It was also concerned with the compatibility of sour gas producing operations with urban development in terms of noise, odours and general activity. Petrogas therefore favoured a setback of at least 500 metres from the pipeline.

The City indicated that it would rely on the advice of the Board. It asked the Board to include recommendations respecting the Level 3 and Level 4 facilities outside the corporate City limits to the east and north of Saddle Ridge, as well as for the facilities within Saddle Ridge.

Board's Views

The Board does not believe that separation distances should be based on the calculated 100 ppm isopleth. One reason for this is the wide range in estimates for the 100 ppm isopleth depending upon the assumptions used in its derivation. Petrogas suggested that a worst case analysis be used to calculate the isopleth, but in the Board's view, this is an unnecessarily restrictive method of determining potential impact in that it assumes every possible factor would be at its worst at the same time. Such an approach reduces the risk of being in an area near sour gas facilities to much less than is faced from even the most remote hazards in modern society. Indeed this was the reason the Board discontinued the use of the isopleth distance when it issued ID 79-2 in 1979 (ID 79-2 was superseded by ID 81-3 in 1981).

As a result of the concerns expressed and information supplied at the meeting, the Board has reviewed the separation distances outlined in its September, 1982 recommendation to the City. Having regard for the H_2S release volumes and the risks and consequences, the Board concludes that the recommended setback distances were unnecessarily large.

The most significant factors which led the Board to this conclusion relate to the H_2S content of the gas and to the possible H_2S release volumes for the facilities in the area. The H_2S content and release volumes associated with the wells and pipelines are at the lower end of the Level 1 classification set out in ID 81-3. This would suggest that the separation distances for Level 1 facilities, 100 metres for wells and the right of way width for pipelines, would be adequate.

With respect to wells and having regard for their capability to produce and the H_2S content of the gas, the Board is satisfied that the 100 metre setback for urban development would not jeopardize public safety.

In this area, the pipeline right of way is generally 13.7 metres wide so the ID 81-3 setback distance from a pipeline in the middle of the right of way would likely be less than 7 metres. The Board does not consider this would be adequate, not so much because of possible danger to the public due to H_2S if a release occurred, but primarily because the setback distance is not adequate in terms of reducing the chances of third-party damage to the pipelines during the heavy development period. Section 28.1 of the Pipeline Regulations establishes a controlled area of 30 metres to minimize chances of third-party damage. The Board believes this is the separation distance that should be maintained from the sour gas pipelines in Saddle Ridge.

The above conclusions that 100 metre and 30 metre separation distances respectively, are, adequate for the existing wells and pipelines, are based on concerns for an acceptable level of safety for the public. The Board does recognize that such separation distances would likely result in nuisance type impacts, such as odours, and noise, on nearby residents. To minimize these impacts and also to further reduce the risk to public safety, the Board believes that the chances of an uncontrolled release should be reduced by requiring special precautions to protect the sour gas facilities from third-party damage. The consequences of a release, in the unlikely event that one did occur, could also be reduced by ensuring that all safety features to limit release volumes are installed and properly operating. These special precautions are discussed further in Section 5.

The City asked the Board to comment respecting separation distances for the Level 3 and 4 facilities east and north of the Saddle Ridge area and in particular, as to whether these would impact on the area. The Board continues to be of the view that the minimum separation distances prescribed in ID 81-3 are appropriate for the sour gas facilities outside the corporate City limits of Calgary. Since the Level 3 facilities in question are more than 1.5 km removed to the east and the Level 4 facilities are approximately 5 km to the north of the Saddle Ridge area, the Board sees no need for special restrictions for Saddle Ridge beyond those set out in the ID. Additionally, the major concern related to increased ground disturbance during construction would not be a problem with respect to the sour gas pipeline outside of the City.

4.2 Land Use within the Restricted Area

The Board notes the uncertainty of the developers, landowners and planners over permitted land use within the setback areas.

Participants' Views

The developers in their preliminary plans, proposed roads, underground services, parks and school grounds within the proposed 20-metre setback. Mr. Longpre suggested that outside storage should be permitted within the setback area up to the pipeline right-of-way.

Board's Views

In view of the reduced setback distance, the Board is of the opinion that public and industry use of the land within the restricted area should be limited as much as possible. The Board believes that it is not appropriate for any buildings to be located in the setback area, nor is it appropriate to have roads or major utilities parallelling the pipeline within the setback. These measures would reduce the possibility of third-party damage to the pipelines during the construction or post-construction phases.

The Board believes the setback area could be used as green areas, but centres for public gatherings such as parks and playgrounds should be avoided. Where public facilities, such as playgrounds and parks abut the setback area, they should be separated by permanent fencing. Limited industrial outside storage could be permitted up to the pipeline right-of-way provided no ground disturbance would be associated with the industrial activity.

4.3 Restrictions on Sour Gas Operations

As indicated in Section 4.1, the Board is satisfied that existing sour gas operations and urban development could co-exist without serious risk to public safety. There would, however, be nuisance impacts of the sour gas operations on residents of the area. For this reason, and because certain surface owners suggested that wells could be abandoned to avoid land use conflicts, the Board is dealing with this matter.

Participants' Views

Petrogas argued that there was a significant amount of gas to be recovered and it was not prepared to abandon the wells without suitable compensation.

All participants agreed that it was in the interests of everyone to deplete the reserves as soon as possible, thereby allowing the reserves to be recovered and not creating undue hardship on the landowners. Petrogas indicated that it was actively pursuing the possibility of accelerated depletion for the wells in the Saddle Ridge area.

Boards' Views

The Board considers the remaining marketable reserves under the Saddle Ridge area to be significant, almost 800 x 10^6 m^3 of gas worth in excess of $80 million at current prices, and therefore concludes that abandonment of the wells at this time would not be appropriate. The Board has also made an assessment of the degree to which reserves would be lost if abandonment were to take place prematurely but at future dates as urban development proceeded. The analysis assumed that gas production would be feasible on a continuous basis and indicated that if abandonment occurred in 1986, some 300 to 500 x 10^6 m^3 of gas worth about $40 million would be ultimately lost. If abandonment occurred in 1990, some 200 to 300 x 10^6 m^3 of gas worth some $25 million would be lost. The lower limit of these calculations assumed that some drainage from beneath the Saddle Ridge area would occur towards an existing northern well.

Given the economic loss from early abandonment of wells in the area and that urban development could proceed economically with separation distances which would not jeopardize public safety, the Board concludes that premature abandonment of wells in the area would not be in the public interest.

Bearing in mind the nuisance impacts that would result from co-existence of gas operations and urban developments, the Board agrees with the participants that rapid depletion of sour gas reserves in or near urban areas is desirable and believes that Petrogas should continue to actively pursue measures towards this end. The Board notes that Petrogas estimate of a one-third reduction in life if the wells are produced year round. It expects that a further reduction in life may be possible if the production rates can be increased.

The Board recognizes the difficulty described by Petrogas of producing the subject wells at full capacity given the existing marketing problems respecting Alberta gas and the substantial shut-in reserves. If voluntary arrangements cannot be made that would allow rapid production of the reserves in question, it may be necessary for the Board to seek an amendment to legislation that would allow it, with the approval of the Lieutenant Governor in Council, to direct the rates at which gas must be purchased from areas such as Saddle Ridge.

4.4 Phasing Urban Development

The possibility of phased urban development has the potential to reduce the time span over which co-existence and the related nuisance problems would be necessary.

Participants' Views

The developers, landowners and the City indicated that it was not appropriate, as Petrogas suggested, to delay urban development until the reserves are depleted. Carma and Kentron submitted that there was a need for inexpensive housing in northeast Calgary that could not be provided elsewhere in the City.

As an alternative to restricting urban development for the entire Saddle Ridge area, Carma/Kentron suggested a phased development where urban expansion would take place as the wells are abandoned. Utilizing the Petrogas abandonment estimates, Carma/Kentron submitted a phased-development plan whereby areas not affected by large setbacks and areas freed up by well abandonments would be developed first. The plan is summarized in Figure 2, and suggests that development could take place in areas 1 and 2 during the 1980s, but by 1989/90, the original ERCB recommended setback from the 11-11 well would place restrictions on future construction possibilities.

Board's Views

The Board believes that a phased development plan to minimize co-existence is not required for public safety but would be desirable to avoid nuisance impacts on residents from the sour gas facilities. Phased development would lower the impact of the noise and odours created by well workovers, flaring and day-to-day sour gas operations.

The Board notes from a comparison of Table 1 and Figure 2 that there is considerable scope to phase developments and minimize impacts during the 1980s. Thereafter the importance of the 4-15 and 11-11 wells, in terms of gas recovery, would mean that co-existence will be necessary if residential developments proceed as planned. The Board does not consider this a serious problem but believes that developers, city planners and Petrogas should cooperate to minimize potential conflicts through a coordinated development approach.

5. SPECIAL MEASURES TO MINIMIZE THE IMPACT OF SOUR GAS OPERATIONS AND THE CHANCES OF A RELEASE

In addition to the subject of separation distances, measures such as notification and safety procedures were discussed at the meeting. The Board considers these to be an inherent part of its recommended reduction in separation distances and, consequently is dealing with them in this report. Where the Board has jurisdiction, it intends to impose the special safety measures and, for those controlled by the City, it recommends adoption by that jurisdiction.

5.1 Notification

Participants' Views

Petrogas suggested that the public should know that sour gas wells and pipelines are in the vicinity of their dwellings so as to improve their awareness with respect to odour, noise, flaring and response to an emergency. Mr. Froese suggested a caveat could be placed on the land title informing the potential buyer.

Board's Views

The Board supports the concept of informing prospective purchasers and residents regarding the present sour gas facilities in the area but it questions the applicability of such a caveat on land titles. An alternative action which the Board believes the City should consider is an information package that would be developed jointly by a

committee that includes the sour gas operator, the City, the developers and the Board. The information package would be made available to prospective purchasers and distributed to residences on a regular basis. The package should clearly set out the existence of the sour gas facilities and should describe expectations and procedures regarding nuisance problems such as odours, noise and flaring.

In the Board's view, the information package should be funded by the developers.

5.2 Safety Procedures

Participants' Views

The developers outlined a number of measures that could be taken to protect the sour gas facilities during the construction and post-construction periods. These include:

- Fencing the pipeline right-of-way until the housing in the area is completed.
- Making vehicle access to the right-of-way impossible except in a controlled manner.
- Utilizing ramps where equipment must cross the pipeline right-of-way.
- Requiring excavations at pipeline crossings to take place prior to the construction of housing near the area.
- Utilizing an absolute minimum number of crossings.
- Utilizing full time inspectors for major excavations near pipelines.
- Imposing strict control measures to protect the pipelines at all times during construction.
- After construction, placing signs in the vicinity of the pipelines and installing underground tapes to mark their locations.

If further precautions are required, the developers suggested that they should be recommended by a utility coordinating committee made up of representatives of all involved parties.

Petrogas briefly outlined some of its crossing procedures including the accurate location and staking of pipelines, fencing of pipeline right-of-way, liaison on a daily basis, establishment of a surveillance system and the possible depressuring of pipelines when crossings are to be installed.

Petrogas indicated that it has a good safety record and must maintain it long after the developer has concluded operations, suggesting that it would be responsible for surveillance and responses to complaints after the construction period. In addition, Petrogas indicated that only the 4-15 well in the Saddle Ridge area has an emergency downhole safety valve and agreed that it may be a good idea to install downhole valves in the other wells if the population increases.

Board's Views

The Board notes that many of the construction precautions that were mentioned at the meeting are required by the Pipeline Regulations and are current practice. However, the Board agrees that for the sour gas facilities under discussion, the additional measures suggested by the developers and operators are appropriate and should be implemented. Details should be submitted to the City, the gas operator and the Board prior to construction and should include all of those suggested earlier by the developers. The Board believes that the cost of these measures, taken to protect the sour gas facilities from ground disturbance, should be borne by the person responsible for the ground disturbance.

The Board considers it appropriate for the operator to install downhole safety valves for the wells in Saddle Ridge at the time of the next workover and no later than the residential development stage in the immediate area. The Board will impose this requirement on the gas producers.

If residential development goes ahead in the subject area prior to the abandonment of the gas wells, the Board suggests that a special liaison committee be established by the City of Calgary. It should be made up of representatives of the gas producers, land developers, residents and landowners in the area, the City and the Board. In addition to coordinating the preparation of the previously mentioned brochure and special measures during construction, it would deal with ongoing complaints or procedures for notifying the public of flaring operations and other relevant matters, and where necessary, would recommend further actions to those having jurisdiction.

The Board would not expect the costs associated with the committee to be significant and would expect them to be generally covered by the participants in the committee. The Board considers it important that the developers' involvement with the committee be maintained after the lands have been developed and disposed of to contractors or individual residents.

6. RECOMMENDATIONS

The Board recommends that the City adopt, for the Saddle Ridge area, separation distances between residential development and sour gas facilities of 100 metres for the wells and 30 metres for pipelines.

The Board further recommended that the City consider for adoption the suggestions set out in this report regarding land use within the restricted area, notification of prospective purchasers and residents, safety procedures during construction and formation of a liaison committee.

ISSUED at Calgary, Alberta, on 8 June 1983.

ENERGY RESOURCES CONSERVATION BOARD

V. Millard
Chairman

G. J. DeSorcy, P.Eng.
Vice Chairman

V. E. Bohme, P.Eng.
Board Member

APPENDIX A

THOSE WHO APPEARED AT THE MEETING

Principal and Representatives (Abbreviations used in Report)	Witnesses
City of Calgary Planning Department (City)	T. Brown, M.C.I.P. B. Simpkins, M.C.I.P. P. Dack, M.C.I.P. Captain M. MacKenzie of the City of Calgary Fire Department
Carma Developers Ltd. and Kentron Development Corporation Ltd. (Carma and Kentron)	A. Froese of Kentron E. Ayerst, M.C.I.P. of Carma M. Saville Dr. D. Leahey of Western Research R. Neufeld G. Brown of Stanley and Associates F. Grigel, P.Eng., M.C.I.P. of Stanley and Associates C. Van Bussel of Stanley and Associates Dr. C. Swoveland of Quantalytics Inc.

Cathton Holdings (Cathton)	R.A. Manning D.G. Ingram J.K. Farries, P.Eng. of Farries Engineering Ltd. P. English, M.C.I.P. of Plan West
Qualico Developments	W. Richter
Oscar Fech Construction Ltd.	O. Fech
Longpre Associates	J.C. Longpre, M.C.I.P.
A.E. Manz	A.E. Manz R.L. Manz, P.Geol.
219575 Alberta Ltd.	M. Sardachuk of Meteor Developments Ltd.
Saddle Ridge Community Association	C. Jacobsen
Petrogas Processing Ltd.	R.H. Orthlieb, P.Eng. D. Parsons G. Simpson, P.Eng. W. Van der Linden Dr. E.K. Enns of the University of Calgary Dr. E. Leavitt of Interra Environmental Consultants Ltd.
Board Staff	L. Holizki, P.Eng. M. Bruni W.G. Remmer, P.Eng. Dr. R. Purvis, P.Eng. C. McKay W.E. Roberts

Mr. Allen filed an intervention but did not appear at the meeting.

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